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R5-8410-01C

GROUNDWATER MONITORING AND  
CONTAMINATION ASSESSMENT PLANS  
FOR COM-PAK ENGINEERING, INC.  
BRIGHTON LANDFILL DIVISION

EPA Region 5 Records Ctr.



296518



John Mathes & Associates, Inc.



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#### APPENDIX A

Geologic Logs for Existing Monitoring Wells

#### APPENDIX B

Existing Monitoring Well Construction Diagrams





GROUNDWATER MONITORING AND  
CONTAMINATION ASSESSMENT PLANS  
FOR COM-PAK ENGINEERING, INC.  
BRIGHTON LANDFILL DIVISION

INTRODUCTION

Com-Pak Engineering, Inc., owns and operates a hazardous waste management facility, Brighton Landfill, located at Craig Lake Road, Brighton, Illinois (Figure 1.). Com-Pak Engineering, Inc., has entered into a Consent Agreement and Final Order concerning the facility with the United States Environmental Protection Agency (U.S. EPA), Region V. The Consent Agreement became effective on September 10, 1985 when signed by Mr. Valdas V. Adamkus, Regional Administrator U.S. EPA, Region V.

Purpose

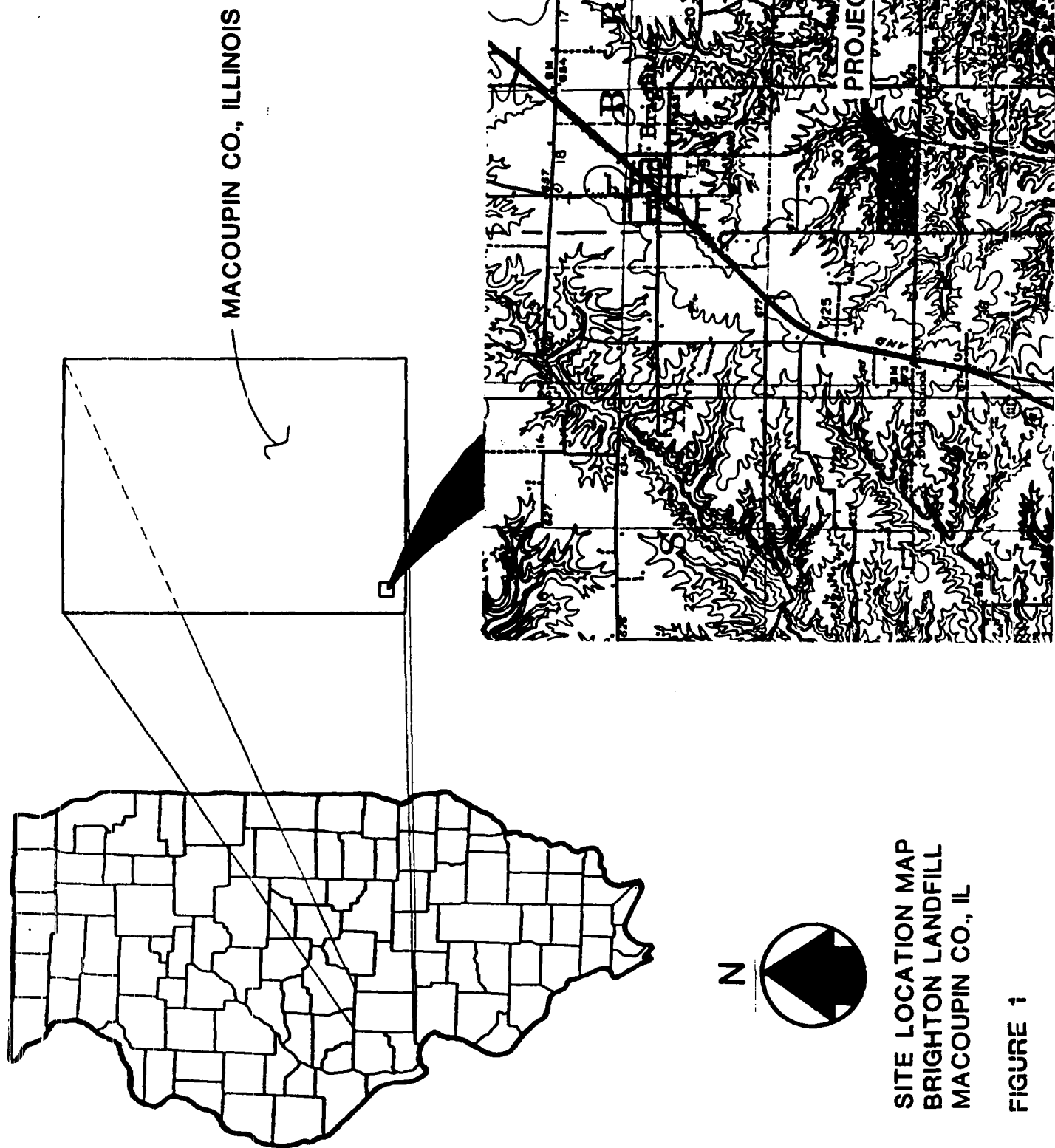
The purpose of this document is to provide the programs and procedures necessary to fulfill the requirements of Subsection C of Section III. ORDERS, pages 4-6, of the Consent Agreement.

Subsection B requirements that concern providing the U.S. EPA with a summary of the groundwater monitoring data obtained during the interim status period will be fulfilled in a separate document.

The basic intent of this document is to provide the U.S. EPA with a plan and implementation schedule for a groundwater monitoring program capable of providing the information required under 40 CFR 270.14 (c) (2) through 270.14 (c) (4). This groundwater monitoring program is composed of two sections: (1) Groundwater Monitoring Plan; and, (2) Groundwater Contamination Assessment Plan.









The Groundwater Monitoring Plan contains:

1. The methodology for investigating the hydrostratigraphic units at the Facility;
2. The locations, depths, and construction specifications for each monitoring well to be used in the sampling effort;
3. The procedures for obtaining samples from which each parameter or constituent can be analyzed;
4. The analytical methods for each constituent listed in Appendix VIII (Hazardous Constituents) of 40 CFR 261 with the exception of the constituents listed in the Consent Decree (Table 1);
5. The procedures for evaluating analytical results to establish the presence or absence of any plume; and,
6. The procedures for reporting the analytical results and evaluation to the U.S. EPA.

If no Appendix VIII constituents are found that are attributable to the operation of any solid waste management unit at the Facility, a Groundwater Detection Monitoring Program will be proposed. If attributable constituents are discovered, a Groundwater Compliance Monitoring Program will be proposed and the Groundwater Contamination Assessment Plan will be put into action. The objectives of the Assessment Plan will be to:

1. Delineate the extent of any contaminant plume on a topographic map with a scale of no less than 1 inch = 200 feet;





Table 1. Appendix VIII, 40 CFR Part 261 Constituents  
Excluded From Brighton Landfill Analytical  
Requirements in the Consent Degree.

1. Acetyl Chloride	12. Zinc Phosphide
2. Aluminum Phosphide	13. Casasin
3. Bis(Chloromethyl) ether	14. Ethylenebisdithiocarbamic acid
4. Carbon Oxyfluoride	15. 2-Fluoroacetamide
5. Dimethyl Carbamoylchloride	16. Iron Dextran
6. Fluorine	17. Lasocarpine
7. Hydrogen Fluoride	18. Mustard Gas
8. Methyl Chlorocarbonate	19. Nitrogen Mustard N-Oxide and HCL salts
9. Nitrogen Dioxide	20. Nitrogen Mustard and HCL salts
10. Phosgene	21. Nitric Oxide
11. Toulene Diisocyanate	22. Phosphine





2. Identify the concentration of each Appendix VIII, 40 CFR Part 261, constituent throughout the plume or identify the maximum concentrations of each Appendix VIII constituent within the plume; and,
3. Establish the rate of migration for all hazardous waste constituents identified in Appendix VII (Basis for Listing Hazardous Wastes) of 40 CFR Part 261, and at 40 CFR Part 261.24 (Characteristic of EP Toxicity).

The general scope of the Groundwater Contamination Assessment Plan will be outlined in this document. A detailed program, however, will be developed, if necessary, following evaluation of the Groundwater Monitoring Plan analytical results and hydrogeologic data and will be submitted to the Agency for review within the time-frame listed in Subsection D, Section III. ORDER.

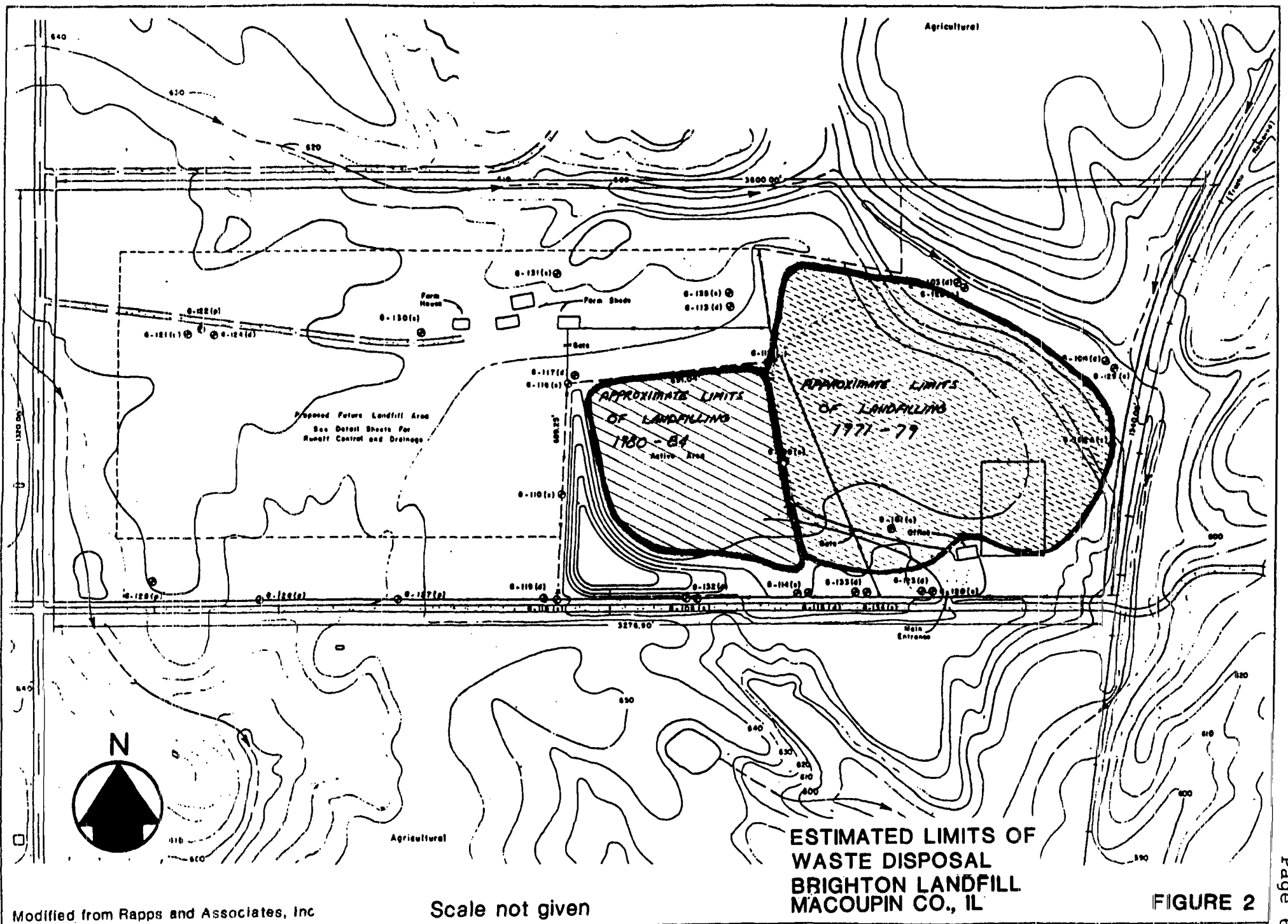
#### Location

Brighton Landfill is located in the extreme southwestern corner of Macoupin County, Illinois, in the S 1/2, SW 1/4 and the W 1/2, SW 1/4, SE 1/4, Section 30, T.7N., R.9W. (Figure 1). The site is roughly rectangular in shape and is oriented east-west. The site is bounded on the east by an abandoned Burlington Northern Railroad Right-of-Way, on the south and west by public roads, and on the north by farmland.

The property contains approximately 105 acres. Waste disposal activities are restricted to approximately 43 acres in the eastern half of the property. Figure 2 illustrates the approximate limits of waste disposal during 1971-1979 (Todd's









Sanitation Service) and 1980-1985 (Com-Pak Engineering, Inc.). The western portion of the property, and along the northern boundary, is undeveloped and consists of pasture/scrub-brush and woodland.

A small, perennial stream flows eastward along the central portion of the northern boundary and then southeastward through the northeastern corner of the property. Maximum relief is approximately 80 feet.

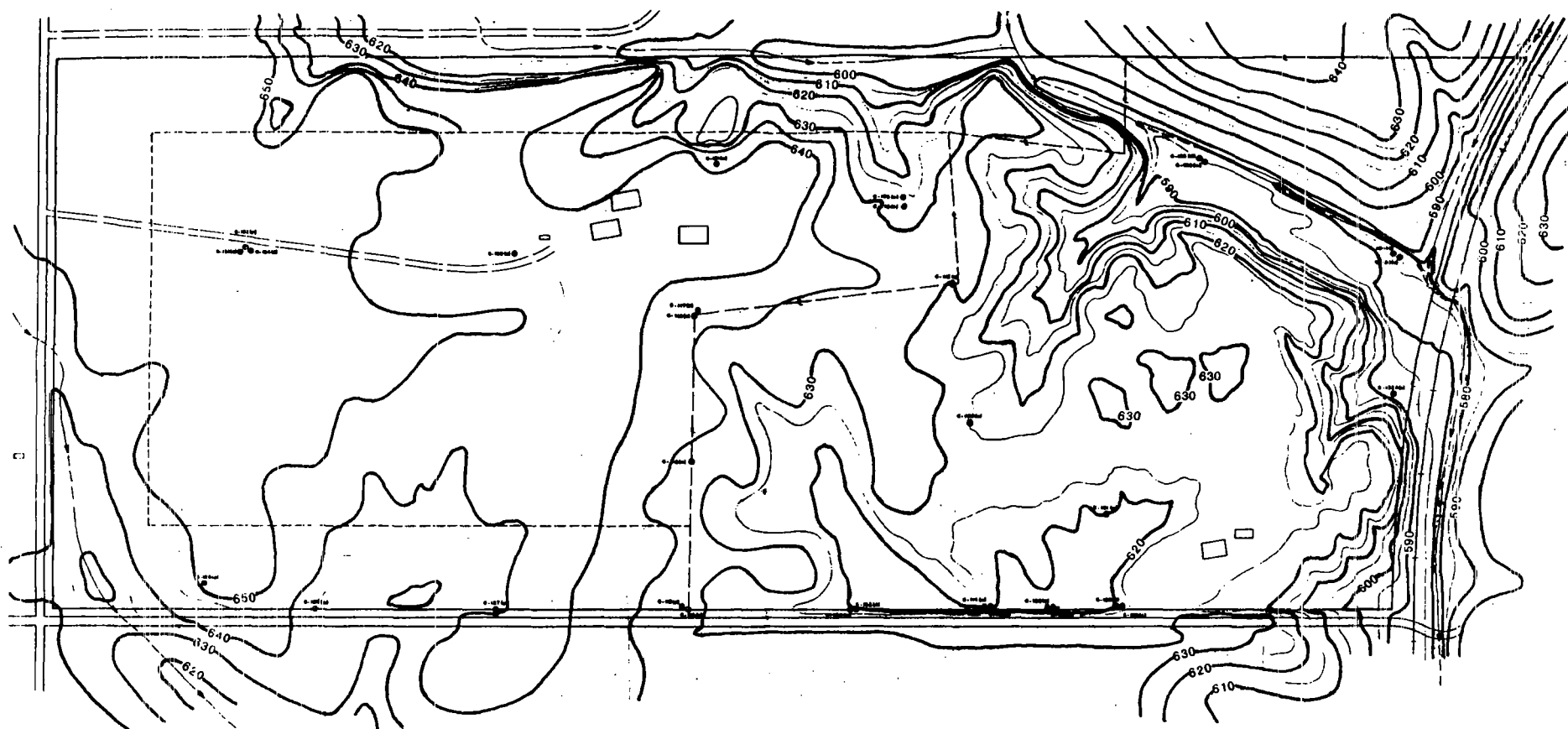
#### Site History

Disposal activities began at Brighton Landfill (formerly known as Todd's Sanitation Services, Waste Management Site) in January, 1971, on the eastern 32 acres. Early unpermitted operations were conducted on an ad hoc basis with little organized planning. Disposal activities were concentrated in eroded "gulleys" (see Figure 3 Pre-Landfill Topography), but data indicated most of the original site was utilized. Refuse and cover material thicknesses are estimated to range between 30-feet in portions of the former "gulleys" and 5- to 7-feet on the upland portions of the 32-acre tract. Waste disposal did not occur north of the perennial stream (see Figure 2).

The site was finally permitted by the Illinois Environmental Protection Agency (IEPA) in November, 1975 nearly six years after disposal activities began. In 1978, Todd's Sanitation Services applied for a development permit to expand the site with an 11.36-acre addition immediately to the west. The expansion plans provided for shallow excavation to a maximum depth of







Scale not given

Modified from Rapps and Associates, Inc.

PRE-LANDFILL SITE TOPOGRAPHY  
BRIGHTON LANDFILL  
MACOUPIN CO., ILLINOIS

FIGURE 3



approximately 25 feet. The depth of the proposed excavation was based upon available soil boring data which were restricted to the upper 25- to 55-feet of unconsolidated deposits on the site. The expansion permit was issued on June 29, 1979, approximately 10 months following submission of the application. During the period between permit submission and issuance, control of the site was assumed by the current operator, Com-Pak Engineering, Inc., formerly Brighton Landfill, Inc.

Com-Pak Engineering, Inc., has conducted waste disposal operations at the site on a 11.36-acre tract located adjacent to the western boundary of the earlier landfill since 1980 (see Figure 2). Waste handled by the facility has consisted of approximately 90 percent domestic refuse and about 10 percent industrial waste of which a small portion would be classified as hazardous on the basis of the occurrences of the heavy metals Lead (Pb), Cadmium (Cd), and Chromium (Cr) in the waste stream. The composition of the earlier disposed waste is unknown.

## HYDROGEOLOGY

### Geology

The Brighton Landfill Site is situated in the Springfield Plain Physiographic Division of the Central Lowland Province of Illinois. The site topography consists primarily of rolling terrain with approximately 80 + feet of relief. Land surface elevations range from approximately 654 feet NGVD (National





Geodetic Vertical Datum of 1929) in the western portion of the site to slightly less than 570 feet NGVD in the northeastern corner along the a small perennial stream.

Published information by the Illinois State Geological Survey (ISGS) suggest that the stratigraphic sequence of unconsolidated deposits overlying bedrock may possibly include in decending order: The Peoria Loess; the Roxanna Silt; the Hagerstown, Vandalia Till, and Smithboro Till Members of the Glasford Formation; and undifferentiated till members of the Banner Formation. These formation were deposited during the Wisconsin, Illinoian, and Kansan periods of Pleisotocene Glaciation and possibly during the Farmdale, Sangamon, and Yarmouthian interglacial periods. Thin colluvial deposits of Recent age are expected to probably occur on hillside slopes and along the stream drainage ways. Alluvial deposits are also possibly present along some stream drainage ways.

Additional stratigraphic units which might be present include the Berry Clay, Mulberry Grove, and Petersburg Silt Members of the Glasford Formation, and possibly the Lierle Clay and Mahomet sand members of the Banner Formation. Figure 4 illustrates the general stratigraphic sequence which might possibly occur at the Brighton Landfill site.

Several of these geologic units appear to be thin or absent in the lower elevation areas on the site, such as creek bottoms, as the result of post-Pleistocene erosion. The stratigraphic





GENERALIZED QUATERNARY  
STRATIGRAPHY  
BRIGHTON LANDFILL  
MACOUPIN CO., IL

STAGE	GEOLOGIC UNIT	ESTIMATED RANGE IN THICKNESS (ft)	NOMINAL DESCRIPTION	INITIAL ORIGIN OF UNIT	REGIONAL DATA		SITE DATA		SOIL POSITION	
					Estimated textural range (%)	Estimated clay mineral range (%)	Average texture (%)	Average clay mineral content (%)		
WISCONSINAN	PEORIA LOESS	1-5	weathered silt	windblown silt	sand 0-5 silt 88-92 clay 15-40	avg. 80-90 illite 10-20 kaol. 5-25	sand-silt-clay 5-65-30 <sup>1</sup> n=2	avg. 4-6 silt 75-18-7 n=3	MODERN <sup>4</sup>	
	ROXANA SILT	0-3	weathered silt	windblown silt	5-25 40-70 20-35	70-90 5-15 5-20	10-65-30 <sup>1</sup> n=3	70-18-12 n=3	FARMDALE <sup>3</sup>	
ILLINOIAN  AND  SANGAMONIAN	GLASFORD FORMATION	BERRY CLAY M	0-6	weathered silt and clay; discontinuous	slipwash and alluvium	10-35 30-65 25-45	80-90 5-15 5-10	no data	no data	SANGAMON <sup>4</sup>
		HAGERSTOWN MEMBER	0-10	weathered sand and gravel; discontinuous	ice-contact deposits	20-75 20-60 5-20	20-70 20-70 10-20	20-60-30 <sup>1</sup> n=5	85-23-17 n=5	
		VANDALIA TILL M	5-40	gray sandy till; common lenses of sand or silt; upper part weathered	glacial deposit	25-50 25-50 15-25	15-65 40-70 10-30	41-60-19 <sup>2</sup> n=5	no data	
		MILBERRY GROVE M	0-5	sand or silt with clay lenses	fluvial	15-60 30-60 10-25	15-65 30-70 10-30	no data	no data	
		SMITHBORO TILL M	5-20	silt to brown silt clay	glacial deposit	10-30 40-65 20-25	30-65 30-55 10-30	no data	no data	
		PETERSBURG SILT M	0-5	weathered silt and sand	windblown or fluvial	15-60 30-70 15-30	15-65 30-70 10-30	no data	no data	
KANSAN  AND  YARMOUTHIAN	BANNER F.M.	LIERLE CLAY M	0-15	weathered silt and clay	slipwash and alluvium	5-35 30-65 25-50	75-90 5-15 5-10	no data	no data	YARMOUTH <sup>4</sup>
		-----	10-30	unsorted till, perhaps laminated by discontinuous silt or sand lenses; upper part weathered	glacial deposits	variable	variable	no data	no data	
		MAHOMET SAND	0-20	sand and gravel; only in places	fluvial	variable	variable	no data	no data	
NEBRASKAN AND AFTONIAN PRE- PLEISTOCENE	ENION FORMATION	?	weathered silt and clay	slipwash and alluvium	variable	variable	no data	no data	AFTON <sup>4</sup>	
		GROVER GRAVEL	?	weathered sand and gravel	fluvial	?	?	no data		no data

1. from field estimates of texture  
2. number of samples averaged  
3. from Mathes report  
4. minor soil, significant alteration to 5-17 feet, minor alteration to 15-30 feet  
5. minor soil, minor alteration to 5-17 feet  
6. significant minor soil



units most effected by erosional thinning or truncation include the Peoria Loess, Roxanna Silt, and the upper members of the Glasford Formation.

Bedrock units underlying the Brighton site are Pennsylvanian in age and are believed to be transitional between the Modesto and Carbondale Formations. These Pennsylvanian units are composed primarily of shale with subsidiary amounts of limestone and sandstone. The Carbondale Formation does, however, contain some coal seams.

Geologic test borings conducted on the site indicate that the maximum thickness of the unconsolidated deposits overlying bedrock ranges from approximately 93 + feet to 60 feet. These deposits are somewhat thicker than regional geologic data indicate. This appears to be primarily due to the existence of a bedrock valley beneath the eastern central portion of the site. This valley appears to be a northward and westward extension of the bedrock valley for the West Fork of the Wood River. The elevation of the bedrock surface ranges from approximately 580 feet NGVD to approximately 530 NGVD in the southeast corner. Based upon geologic test drilling data, it appears that the bedrock valley underlies a large majority of the site and the valley floor slopes toward the east-southeast.

The texture of the deposits overlying bedrock at the site is predominantly cohesive with a relatively small number of significant sandy seams. Although the deposits are primarily cohesive, their texture varies significantly with location and depth. Soil textures range from plastic clays with little sand





and gravel to slightly silty and/or clayey coarse-grained sands. Shaley clays, lignite, bituminous coal, and peaty materials have also been encountered at the site. The majority of the geologic test borings at the Brighton Facility have been logged using the U.S. Department of Agriculture textural classification system. The following discussion, and all future textural classification, will employ the Unified Soil Classification System (ASTM D-2488).

Geologic data indicate that as much as eight feet of Peoria Loess and three to six feet of Roxanna Silt are present at the site in the higher elevation areas. Texturally, the Peoria Loess consists of silty clay and clayey silt and the Roxanna Silt appears to be primarily a slightly clayey silt. Below the Roxanna Silt, the Hagerstown member of the Glasford Formation is sometimes encountered in the elevation range of 608-to-614 feet NGVD. The composition of this unit is highly variable, but in some areas is primarily a slightly silty sand with some clay and ranges in thickness from approximately zero to six feet. The Hagerstown is absent when land surface elevation is less than 608 feet due to erosion and occasionally above that elevation due to non-deposition.

Below the Hagerstown, the Vandalia Till and Smithboro Till Members of the Glasford Formation are present throughout the site with the exception of the lowest elevation areas along the perennial creek. The Vandalia Till is typically somewhat sandier and much denser and stiffer than the underlying Smithboro Till, although there are exceptions. In general, the Vandalia Till contains silty sandy clays with traces of gravel. The Smithboro





Till consists primarily of silty clays and clayey silts with a trace to no gravel. The combined thickness of the two till members ranges from approximately 50 feet to possibly 10 feet or less where land surface elevations approach 570 feet NGVD along the streams.

The Berry Clay, Mulberry Grove, and Petersburg Silt members of the Glasford Formation have not been encountered during geologic test drilling at the site.

Glacial till deposits belonging to the Banner Formation underlay the Glasford Formation throughout the site. The thickness of this unit appears to range from approximately 15 feet to greater than 30 feet. The Banner Formation appears to thicken to the east southeast along the trend of the underlying bedrock valley. The unit consists primarily of slightly silty clay to clayey silt with subsidiary amounts of sand and gravel. Seams of peat, bituminous coal, lignite and other organic materials are occasionally encountered.

Sand zones are occasionally encountered at the site in the elevation range of  $570\pm$  to  $580 \pm$  feet NGVD. These sporadic sand zones may be either basal deposits of the Glasford Formation or uppermost deposits of the underlying Banner Formation.

Site geologic data indicate the presence of approximately six to eight feet of colluvial/alluvial deposits along the small creek in the northeastern corner of the landfilled property. These deposits range in texture from silty clayey sands to silty clays and clayey silts. It is believed that colluvial deposits are also present along steeper land surface slopes and in other





low lying clayey silts. It is believed that colluvial deposits are also present along steeper land surface slopes and in other low lying areas on the site.

#### Shallow Groundwater Flow Zone

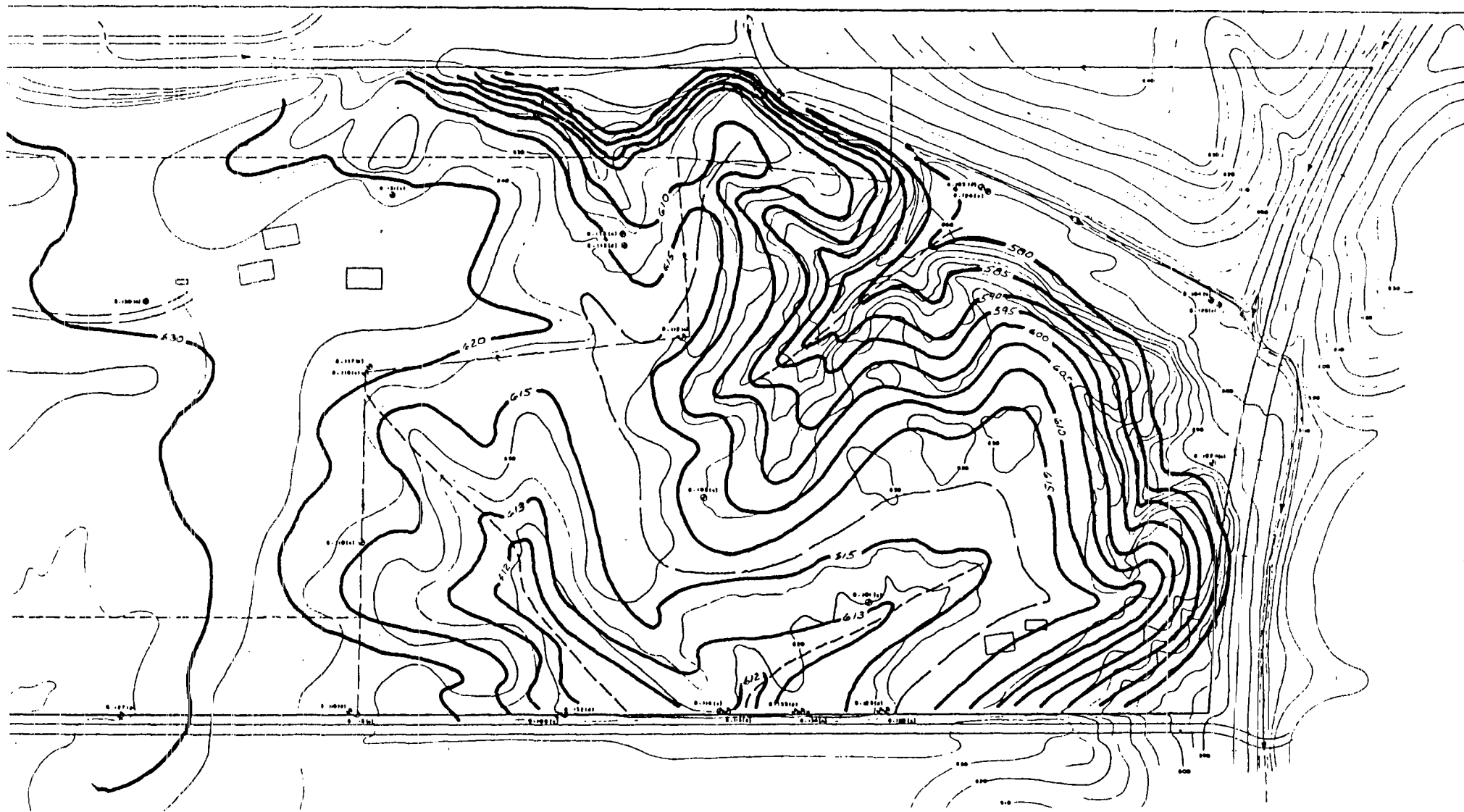
A groundwater flow zone exists in the surficial deposits on the site. Above elevation approximately 608, this flow zone consists of the coarse-grained portions of the Hagerstown unit and/or sand lenses in the upper Vandalia, if present, and/or overlying loessial deposits. Data indicate that this groundwater system is recharged locally by rainfall infiltration and is under water table conditions. Data indicate that the shallow flow zone is underlain by the Vandalia Till member of the Glasford Formation. Figure 5 is a water table contour map for the shallow flow zone adjusted to original topography.

Below land surface elevation 608, where the loessial deposits and Hagerstown member are absent due to erosion, the shallow groundwater flow zone consists of colluvial/alluvial deposits. Along the stream valley in the northeast corner of the site, the sand deposits that occur approximately 8- to 15-feet below land surface ( $570 \pm$  to  $580 \pm$  feet NGVD) could possibly be Glasford/Banner deposits. In this area data suggest that they are part of the shallow flow zone (Figure 6).

Discharge from the shallow flow zone occurs through bank seepage into small streams in the area. In addition, the unit will also discharge at small seeps along steeper hillsides where the Hagerstown and/or loessial deposits outcrop.







Scale not given

— 613 —

Water Table Contour  
Line and Elevation

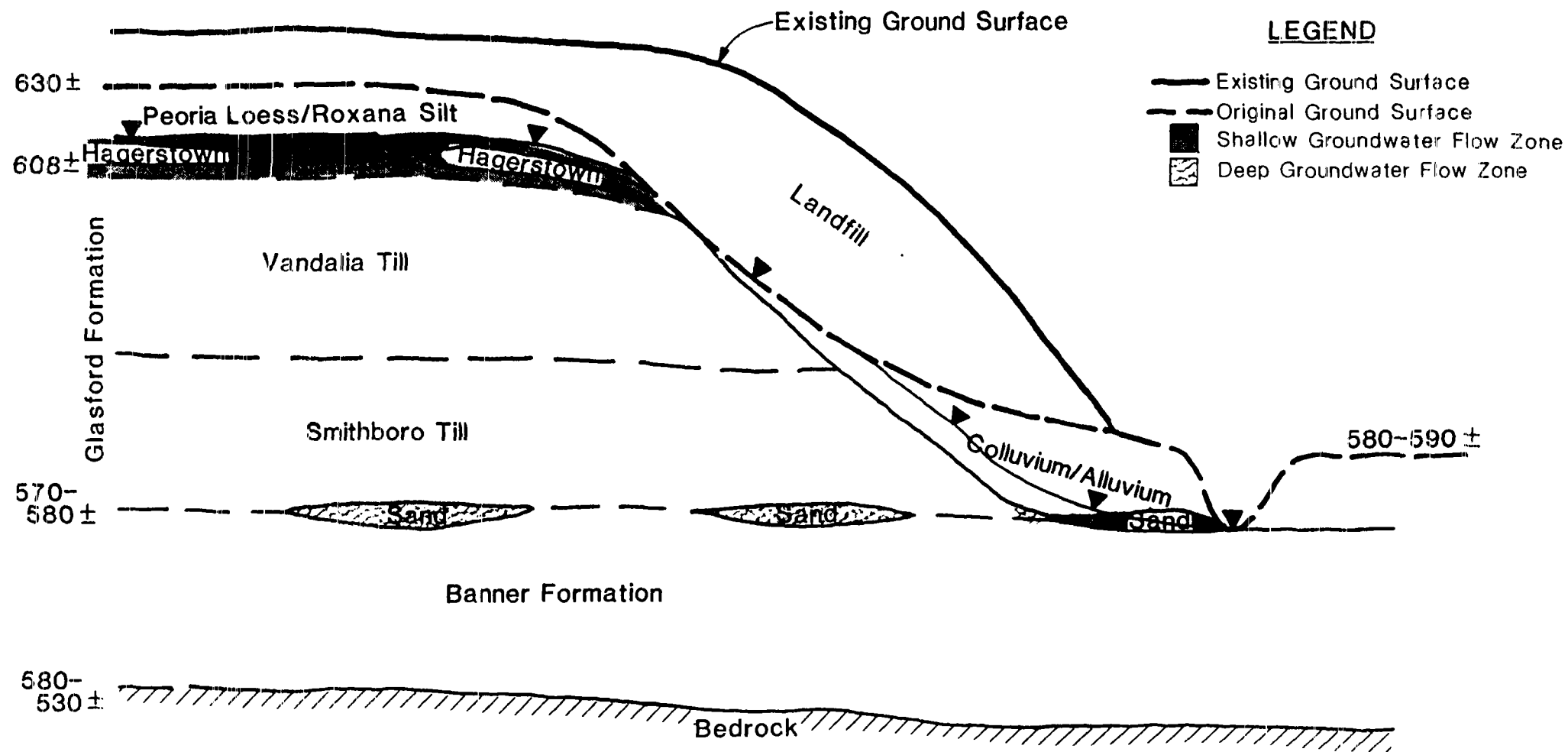
- Contour Interval as Shown
- Modified from Rapps Associates, Inc.

WATER TABLE CONTOUR MAP  
ADJUSTED FOR CONFORMANCE  
TO ORIGINAL TOPOGRAPHY  
BRIGHTON LANDFILL  
MACOUPIN CO., IL



FIGURE 5





GENERAL HYDROGEOLOGIC CROSS-SECTION  
SHALLOW & DEEP GROUNDWATER FLOW ZONES  
BRIGHTON LANDFILL  
MACOUPIN CO., IL

FIGURE 6



### Deep Groundwater Flow Zone

Hydrogeologic data indicate that a second minor groundwater flow zone exists in the sandy deposits which sometimes occur at the interface between the Glasford and Banner Formations. (Figure 6) This flow zone could be more laterally continuous in the area and, therefore, more regionally significant.

The sporadic sand zones that compose this flow zone are believed to occur at approximately elevation 570 to 580. Recharge to this flow zone is believed to occur by either downward leakage from the shallow zone through vertical cracks in the Glasford formation or by outcrop recharge where this sand zone daylights. Groundwater in this flow zone is possibly under semi-artesian conditions where overlain by glacial till. Along the stream valley, data indicate that this flow zone may connect with the shallow flow zone if sand units in that area are Banner/Glasford deposits with some degree of connection to other sand zones in the interior portion of the site. Because the sand zones are only occasionally present at the formation contact, it is not believed at this time that the deep groundwater flow zone is present throughout the site.





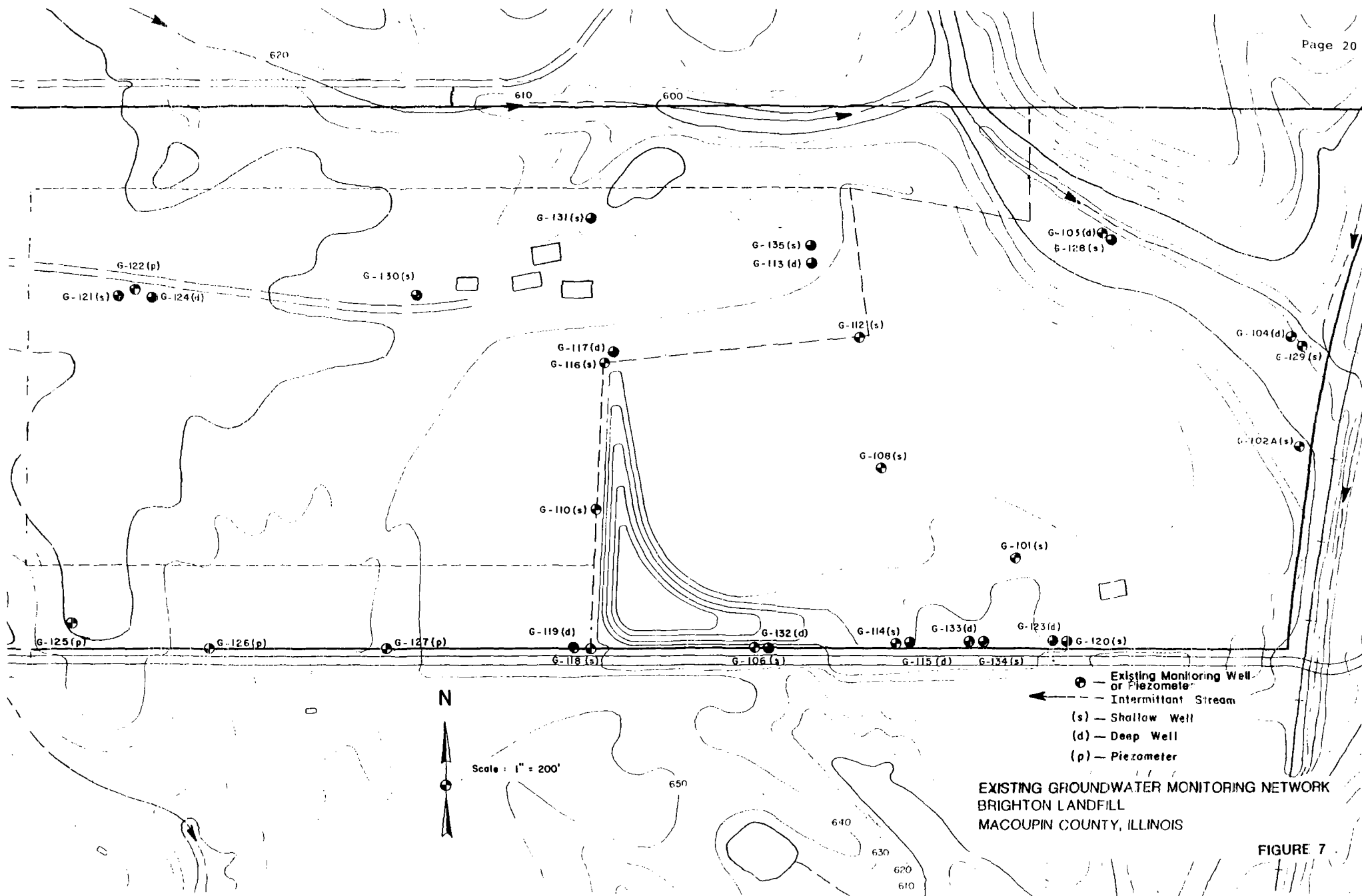


FIGURE 7



be used as an up gradient deep flow zone well. This may change, however, depending on the results of Appendix VIII testing in this well and shallow zone well 136 (s).

The following five existing downgradient monitoring wells will be used in this monitoring plan: 1) G-123 (d); 2) G-133 (d); 3) G-115 (d); 4) G-132 (d); and, 5) G-119 (d).

Other Site Monitoring Wells - Existing groundwater monitoring well G-131 (s) will not be utilized in this program even though it meets required construction criteria because of its location on the site; the well is located north and downgradient from the farm shed complex and the possibility of local contamination has raised questions regarding its use. Similar questions exist relative to wells 135 (s) and 113 (d), because of their position relative to the landfill and shallow groundwater flow patterns in the vicinity (Figure 5). Monitoring well G-104 (d) will not be used because it is completed in the Kansan drift below the Glasford/Banner contact and it is feared that differing lithologies may add an additional bias of any test results. These wells could be used later in a contamination assessment or compliance monitoring program if needed.

At this time, the remaining 14 monitoring wells and piezometers which do not meet accepted construction requirements will be left in place and utilized for water level measuring purposes. While these wells are not suitable for the collection of groundwater samples for chemical analysis, well construction data indicate that they have at least a bentonite pellet seal in





# RECORD OF SUBSURFACE EXPLORATION



PROJECT Brighton Landfill, Depth Expansion BORING 4A (104d)

CONTRACT 811154 DATE DRILLED 12-30-81 DRILLED BY Simoncini LOGGED BY Maxxiner PIEZOMETER Yes DRILLING METHOD Hollow Auger

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	K cm/sec	SHEAR STRENGTH, TSF SV Δ OP/2 QU/2 WATER CONTENT, % LL
				SURFACE ELEVATION <u>580.3'</u>			
	1	SS		Brown Sandy LOAM	2-2		
5	2	SS			2-1		
	3	SS			WH/18"		
10	4	SS	Encountered water @ 9.0'	Brown Loamy SAND	2-2	1.1 $\times 10^{-7}$	
	5	SS		Brownish-Gray Silty Clay LOAM	6-11		
15	6	SS		-Gray Below 15.0'	7-11		
	7	SS			6-9		
20	8	SS			4-7	1.2 $\times 10^{-8}$	
	9	SS			6-8		
25	10	SS			5-10		
	11	SS		-Trace Organics @ 26.5'	4-6		
30	12	SS			4-6	1.1 $\times 10^{-8}$	
	13	SS			5-6		
35	14	SS		-Trace Organics @ 34.0'	5-6		
				Contd.			

GROUND WATER DEPTH AT COMPLETION — AFTER — AFTER —

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION



PROJECT Brighton Landfill, Depth Expansion BORING 4A Contd.  
(104d)

CONTRACT 811154 DATE DRILLED 12-30-81 DRILLED BY Simoncini  
PIEZOMETER Yes LOGGED BY Maxeliner

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	K cm/sec	SHEAR STRENGTH, TSF		
							SV Δ	QP/2 □	QU/2 C
							WATER CONTENT, %		
							PL +	LL +	
				SURFACE ELEVATION <u>580.3'</u>					
	14	SS		Gray Silty Clay LOAM					
	15	SS			5-6				
	16	SS			5-5				
40				TOB					
45				* Remolded Permeability Sample					

GROUND WATER DEPTH AT COMPLETION — AFTER — AFTER —

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill, Depth Expansion

BORING 12, 12A  
(119d, 118s)



CONTRACT 730622, 81154 DATE DRILLED 5-30-79, 12-15-81 DRILLED BY Stinchfield, Robert

LOGGED BY Schaefer, Maxeiner PIEZOMETER Yes DRILLING METHOD Hollow Auger

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	K Cm/sec	SHEAR STRENGTH, TSF SV Z OP/2 QL 2	WATER CONTENT, % LL PL
				SURFACE ELEVATION <u>631.2'</u>				
	1	SS		Brown Silty CLAY -w/Fine Roots @ 1.5' -Brown & Gray w/Oxidized Spots Below 1.5'	5-7			
5	2	SS		-w/Oxidized Stains @ 4.0'	7-10			
	3	SS		Brown & Gray CLAY w/Oxidized Spots, Stains	5-8			
10	4	SS			6-8			
	5	SS			6-7			
15	6	SS		Brown Sandy LOAM w/Oxidized Spots, Trace Gravel	1-3	5.0 $\times 10^{-8}$		
	7	SS			15-17			
20	8	SS		Brown LOAM, Trace Gravel -w/Oxidized Spots From 19.0-28.0'	16-22	1.7 $\times 10^{-8}$		
	9	SS		-Gray Below 21.5'	15-18			
25	10	SS			14-18	3.3 $\times 10^{-8}$		
	11	SS			17-19			
30	12	SS			10-13			
	13	SS		-w/Oxidized Stains @ 31.5'	10-15			
35	14	SS		-w/Oxidized Spots Below 34.0'	11-16			
				Contd.				

GROUND WATER DEPTH AT COMPLETION 31.7' (12) AFTER 1 day 11.0' (12) AFTER 3 days 8.0' (12)  
Dry (12A) After 5 days 14.3' (12A)

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION



JOHN MATHES & ASSOCIATES, INC.

PROJECT Brighton Landfill, Depth Expansion

BORING 12, 12A

Contd. (119d, 118s)

CONTRACT 790622, 811154

DRILLED BY Simoncini, Roberts

DATE DRILLED 5-30-79, 12-15-81

DRILLING METHOD Hollow Auger

LOGGED BY Schaefer, Maxeiner

PIEZOMETER Yes

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	cm/sec	SHEAR STRENGTH, TSF SV Δ OP/2 QH/2 C	WATER CONTENT, % LL
				SURFACE ELEVATION <u>631.2'</u>				
	14	SS		Brown LOAM, Trace Gravel				
	1A	SS		-Brownish-Gray @ 36.5'	6-10	1.2 x 10 <sup>-8</sup>		
				-Gray @ 39.0'				
40	15	SS		-Brownish-Gray @ 41.5'	10-13			
	2A	SS		-Gray Below 44.0'	8-13			
45	16	SS			11-15			
	17	SS			9-15			
50	3A	SS		Brownish-Gray Clay LOAM -Trace Gravel @ 49.0'	9-12	7.7 x 10 <sup>-9</sup>		
	4A	SS			9-16			
55	5A	SS		Gray CLAY -w/Shale @ 52.5' -Brownish-Red From 55.0-58.0'	15-25			
	6A	SS			25-48			
60	7A	SS		-w/LIGNITE Seams From 59.0-60.4' -Brownish-Gray From 59.0'-61.7'	30-50/5"	3.8 x 10 <sup>-9</sup>		
	8A	SS		-Grayish-Brown From 61.7-62.3'	36-50/3"			
	9A	SS	*NOTE	-Brownish-Gray Below 62.3'	x-50/1"			
65				TOB				
				*NOTE: AR @ 64.0' On Apparent LIMESTONE				

GROUND WATER DEPTH AT COMPLETION 31.7', (12) AFTER 1 day 11.0' (12) AFTER 3 days 8.0' (12)  
 Dry (12A) After 5 days 14.3' (12A)

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION



PROJECT Brighton Landfill, Depth Expansion

BORING 20 (117d)

CONTRACT 811154  
 DRILLING METHOD Hollow Auger  
 DATE DRILLED 12-16, 17-81  
 DRILLED BY Robert J. Maxeiner  
 LOGGED BY Maxeiner  
 PIEZOMETER Yes

DEPTH (FL)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	cm/sec	SHEAR STRENGTH, TSF	WATER CONTENT, %
				SURFACE ELEVATION <u>637.7'</u>				
	1	SS		Brown Silty Clay LOAM	6-9			
				-w/Oxidized Stains Below 4.0'				
5	2	SS			7-11			
				Brownish-Gray Silt LOAM w/ Oxidized Spots	13-15			
				Brown Silty Clay LOAM	10-14			
10	4	SS						
				-w/Silt Pockets, Oxidized Stains @ 11.5'	7-9			
	5	SS						
				Brown Clay LOAM	4-4			
15	6	SS		Brown Sandy Clay LOAM				
					15-26			
	7	SS						
				Brown LOAM, Trace Gravel	21-33			
20	8	SS						
				Gray Clay LOAM	19-28			
	9	SS		-w/Gravel, Oxidized Partings @ 21.5'				
				-Trace Gravel Below 24.0'	20-27			
25	10	SS						
					13-18			
	11	SS						
					9-14			
30	12	SS						
					8-13			
	13	SS						
				-w/Chert Fragment @ 34.0'				
35	14	SS			8-11			
				Cont'd				

GROUND WATER DEPTH AT COMPLETION -- AFTER 3 days 60.5' AFTER         

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION



PROJECT Brighton Landfill, Depth Expansion BORING 20 Contd.  
(117d)

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	K cm/sec	SHEAR STRENGTH, TSF			WATER CONTENT, %	LI.
							SV Δ	OP/2 □	QU/2 C		
				SURFACE ELEVATION <u>637.7'</u>							
	14	SS		Gray Clay LOAM, Trace Gravel							
	15	SS			7-12						
40	16	SS			7-10						
				-w/Organics @ 41.5'							
	17	SS			7-11						
45	18	SS			6-10						
				Gray Silty CLAY							
	19	SS			5-8						
				-Trace Gravel Below 49.0'							
50	20	SS			6-8						
			Encoun- tered water @	Gray LOAM w/Organics	7-8	8.4 x10 <sup>-8</sup>					
	21	SS	52.0'								
				Gray Silty CLAY	7-11						
55	22	SS									
				-Brownish-Gray @ 56.5'	7-10						
	23	SS									
				-Trace Gravel Below 59.0'	7-10						
60	24	SS									
				Brownish-Gray Clay LOAM, Trace Gravel	6-10	9.8 x10 <sup>-9</sup>					
	25	SS									
			Encoun- tered water @	Gray Loamy SAND	6-7						
65	26	SS	66.25'	Gray Sandy Clay LOAM							
	27	SS		Gray Loamy SAND	18-23						
				-w/Gray Silty CLAY Seam From							
70	28	SS		69.5-70.0'	21-16	1.2 x10 <sup>-6</sup>					
				Contd.							

GROUND WATER DEPTH AT COMPLETION -- AFTER 3 days 60.5' AFTER         

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.--

CONTRACT 011154

DRILLED BY ROBERTS

DATE DRILLED 12-16-77

PIEZOMETER Yes

DRILLING METHOD Hollow Auger

LOGGED BY Maxciner



# RECORD OF SUBSURFACE EXPLORATION



PROJECT Brighton Landfill, Depth Expansion

BORING 20 Contd.  
(117d)

DEPTH (FT.)	SAMPLE NUMBER	SAMPLE TYPE	NOTES	DESCRIPTION OF MATERIAL	BLOWS	K cm/sec	SHEAR STRENGTH, TSF		WATER CONTENT, %
							SV 2	OP/2	
				SURFACE ELEVATION <u>637.7'</u>					
	28	SS		Gray Loamy SAND					
				Gray Silt LOAM					
	29	SS	Rocky Drill- ing From 74.0- 75.0'		8-13	1.1 $\times 10^{-8}$			
				Grayish-Brown Silty CLAY w/Gravel	50/2"				
	30	SS							
				Gray Silty Clay LOAM, Trace Gravel	11-16				
	31	SS							
	32	SS			9-11				
	33	SS		Brownish-Gray Silt LOAM, Trace Gravel	9-13				
	34	SS			7-10				
	35	SS			5-8				
				-Gray Below 89.0'					
	36	SS			4-6	1.3 $\times 10^{-8}$			
	37	SS			8-12				
				TOB					

GROUND WATER DEPTH AT COMPLETION -- AFTER 3 days 60.5' AFTER         

SCALE 1" = 5.0'

JOHN MATHES & ASSOCIATES, INC.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition  
 JOB NO. 04-1764

BORING G113(d), G135(S)  
 SHEET 1 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>628.1'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf					
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○	PL	NMC	LL
								0 1/2 1 1 1/2 2 2 1/2			+	•	x
								0 50 100					
								Rock Quality Designation					
								0 50 100					
	1	SS 18/16			Brown Silt LOAM	3-2-4							
-5	2	SS 18/18				3-6-9							
	3	SS 18/18			Brown Silty Clay LOAM	4-6-8							
-10	4	SS 18/18				2-3-4							
	5	SS 18/18			- Limestone Fragment @ 12.0'	25-25-29							
-15	6	SS 18/18				14-17-48							
	7	SS 18/18			Brown Loamy SAND	14-32-44							
-20	8	SS 18/18				19-52-66							
	9	SS 18/18			Gray Silty Clay LOAM	17-19-28							
-25	10	SS 18/18				9-15-20							
	11	SS 18/18				5-11-17							
-30	12	SS 18/18				5-10-14	128						
	13	SS 18/3			Gray Silty CLAY	6-11-16							
-35	14	SS 18/18				5-7-12							

DRILLING METHOD Hollow Auger  
 DATE DRILLED 6-1-84  
 DRILLED BY Roberts  
 LOGGED BY Harriss/Maxeiner  
 PIEZOMETER Yes

GROUNDWATER LEVELS  
 Encountered at 16.0 Feet  
0 Hours after completion 29.0 Feet  
 after completion Feet  
 after completion Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G113(d), G135(s)

JOB NO. 04-1764

SHEET 2 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL. Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>628.1'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf				
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○		
14	SS				Gray Silty CLAY							
15	SS	18/18				2-6-8						
40	SS	18/18				3-6-9						
	SS	18/16			Gray-Green Silty CLAY	4-7-11						
45	SS	18/18				6-11-19						
	SS	18/18				9-14-21						
50	SS	18/18				6-11-17	121					
	SS	18/18				7-11-19						
55	SS	18/18			Gray-Green CLAY	8-12-21						
	SS	18/18				5-8-10						
60	SS	18/18				6-8-13						
					TOB							
					Remarks: 1. Hard Drilling 55.5'-55.8'							
65												

DRILLING METHOD Hollow Auger  
 DATE DRILLED 6-1-84  
 DRILLED BY Roberts  
 LOGGED BY Harriss/Maxeiner  
 PIEZOMETER Yes

GROUNDWATER LEVELS  
 Encountered at 16.0 Feet  
0 Hours after completion 29.0 Feet  
 after completion Feet  
 after completion Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G115 (d), G107

JOB NO. 04-1764

SHEET 1 OF 3

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>646.1'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf					
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○	PL	NMC	LL
								0 1/2 1 1 1/2 2 2 1/2			+	•	x
								0 50 100					
								Rock Quality Designation					
								0 50 100					
	1	SS			Brown Silty CLAY	-6-8							
-5	2	SS			Brown Silty Clay LOAM	-5-6							
	3	SS				-4-5							
-10	4	SS				-5-7							
	5	SS			Dark Yellowish Brown Silty CLAY	-5-6							
-15	6	SS				-6-5							
	7	SS		1	Yellowish-Brown LOAM	-2-3							
-20	8	SS			Yellowish-Brown Sandy Clay LOAM	-50/6"							
	9	SS			Dark Gray-Brown LOAM	-50/5"							
-25	10	SS		2		-52							
	11	SS				-33-43							
-30	12	SS				-34-26							
	13	SS		3		-14-18							
-35	14	SS				-14-17							

DRILLING METHOD Hollow Auger

DATE DRILLED 10-6, 7-80 & 5-25-84

DRILLED BY Simoncini/Roberts

LOGGED BY Conder/Maniaci/Maxeiner

PIEZOMETER None

## GROUNDWATER LEVELS

G107 Encountered at 21.5 Feet

G107 72 Hours after completion 15.1 Feet

G107 14 Days after completion 17.9 Feet

G115 (d) 0 Hrs after completion 10.0 Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G115(d), G107

JOB NO. 04-1764

SHEET 2 OF 3

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS  (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>646.1'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf												
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SV $\Delta$	QP/ $\square$	QU/ $\circ$	PL	NMC	LL							
								0	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	+	.	x				
	14	SS		4	Dark Gray-Brown LOAM															
	15	SS				-11-14														
40	16	SS				-11-15														
	17	SS				-8-11														
45	18	SS				Dark Gray CLAY	-7-10													
	19	SS				-9-10														
50	20	SS				-11-14														
	21	SS				-9-11														
55	22	SS				-8-8														
	23	SS				-11-14														
60	24	SS				-14-19														
25	1	SS	18/18			Brown CLAY	-50-50/3"													
		SS					6-16-25													
65	26	SS	18/18			Gray-Green SHALE	66/6"													
		SS					16-40-108													
	3	SS	18/18			Red-Brown SHALE	17-36-69													
70	4	SS	18/18				10-32-75													

DRILLING METHOD Hollow Auger  
 DATE DRILLED 10-6, 7-80 & 5-25-84  
 DRILLED BY Simoncini/Roberts  
 LOGGED BY Conder/Maniaci/Maxeiner  
 PIEZOMETER None

**GROUNDWATER LEVELS**  
 G107 Encountered at 21.5 Feet  
 G107 72 Hours after completion 15.1 Feet  
 G107 14 Days after completion 17.9 Feet  
 G115(d) 0 Hrs after completion 10.0 Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G115(d), G107

JOB NO. 04-1764

SHEET 3 OF 3

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>646.1'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf									
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SV $\Delta$	QP $\frac{1}{2}$ $\square$	QU $\frac{1}{2}$ $\circ$	PL	NMC	LL				
4	SS	18/18			Red-Brown SHALE												
5	SS	18/18				6-20-41											
6	SS	17/16			Gray-Green SHALE TOB	8-16-100/51											
					Remarks: 1. Harder Drilling @ 20.0' 2. $k=9.7 \times 10^{-8}$ cm/sec. 3. $k=1.7 \times 10^{-8}$ cm/sec. 4. $k=1.2 \times 10^{-8}$ cm/sec.												

DRILLING METHOD Hollow Auger  
 DATE DRILLED 10-6, 7-80 & 5-25-84  
 DRILLED BY Simoncini/Roberts  
 LOGGED BY Conder/Maniaci/Maxeiner  
 PIEZOMETER None

## GROUNDWATER LEVELS

G107 Encountered at 21.5 Feet  
 G107 72 Hours after completion 15.1 Feet  
 G107 14 Days after completion 17.9 Feet  
 G115(d) 0 Hrs. after completion 10.0 Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition  
 JOB NO. 04-1764

BORING G120(s), G123(d)  
 SHEET 1 OF 2

DEPTH (ft)	SAMPLE		SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>627.6'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf								
	NUMBER	INTERVAL AND TYPE					ADVANCED / RECOVERED (in)	SVΔ	QP/2□	QU/2○	PL	NMC	LL		
	1	SS	18/14		Brown Si Clay LOAM, Possible FILL, Organics	4-4-7									
-5-	2	SS	18/16		Brown Silt LOAM	3-4-5									
	3	SS	18/18			2-3-5									
-10-	4	SS	18/18			2-3-5									
	5	SS	18/18			3-4-5	113								
-15-	6	SS	18/18		Brown Silty Clay LOAM	4-5-6									
	7	SS	18/18			2-5-5									
-20-	8	SS	18/18			7-16-20	127								
	9	SS	18/18			12-17-25									
-25-	10	SS	18/18		- Gray-Brown From 24.0'-30.5'	7-12-17									
	11	SS	18/18			4-7-10									
-30-	12	SS	18/18			3-9-12									
	13	SS	18/18		- Gray Below 31.5'	3-7-12									
-35-	14	SS	18/18			3-7-11									

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-23, 24-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

GROUNDWATER LEVELS  
 Encountered at - Feet  
- Hours after completion - Feet  
- after completion - Feet  
- after completion - Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G120(s), G123(d)

JOB NO. 04-1764

SHEET 2 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS  (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>627.6'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SV $\Delta$	QP $\square$	QU $\circ$	PL	NMC	LL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	14	SS			Gray Silty Clay LOAM		124																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-23, 24-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

## GROUNDWATER LEVELS

Encountered at          Feet  
         Hours after completion          Feet  
         after completion          Feet  
         after completion          Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.







**SHEET 2 OF 2**

**John Mathes & Associates, Inc.**



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G128

JOB NO. 04-1764

SHEET 1 OF 1

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>588.6'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf		
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○
	1	SS 18/14			Dark Brown Silt LOAM	2-1-3				
-5-	2	SS 18/15			Dark Brown Silty Clay LOAM	2-3-4				
	3	SS 18/15				2-1-2				
-10-	4	SS 18/18			Brown Sandy Clay LOAM	2-1-2				
	5	SS 18/8				2-10-6				
-15-	6	SS 18/18			Gray-Brown Silty CLAY TOB	4-8-18				
-20-										
-25-										
-30-										
-35-										

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-17-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 Encountered at -                      Feet  
 Hours after completion                      Feet  
 after completion                      Feet  
 after completion                      Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G130

JOB NO. 04-1764

SHEET 1 OF 1

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>638.4'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf							
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SV $\Delta$	QP $\square$	QU $\square$	LL	Rock Quality Designation			
	1	SS	18/12		Brown Silty Clay LOAM    Gray-Brown Below 11.5'    TOB	2-4-6									
-5-	2	SS	16/18			3-4-6									
	3	SS	18/18			3-4-5									
-10-	4	SS	18/18			3-4-6									
	5	SS	18/18			3-5-6									
-15-	6	SS	18/18			3-4-4									
-20-															
-25-															
-30-															
-35-															

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-16-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

## GROUNDWATER LEVELS

Encountered at - Feet  
 0 Hours after completion 14.3 Feet  
 .25 Hrs after completion 13.6 Feet  
 .5 Hrs after completion 11.5 Feet  
 1 Hrs after completion 8.0 "

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G131

JOB NO. 04-1764

SHEET 1 OF 1

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>628.6'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf		
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SV $\Delta$	QP $\square$	QU $\circ$
	1	SS	18/1		Dark Gray Silt LOAM, Possible FILL	2-2-2				
-5-	2	SS	18/12		Brown Silty LOAM	1-1-2				
	3	SS	18/18		Brown Silty Clay LOAM	2-10-17				
-10-	4	SS	18/18		Gray Silty CLAY	12-23-28				
	5	SS	18/18			13-28-61				
-15-	6	SS	18/18			20-30-64				
	7	SS	18/18			16-23-31				
-20-	8	SS	18/18			11-16-27				
					TOB					
-25-										
-30-										
-35-										

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-15-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 Encountered at      Feet  
     Hours after completion      Feet  
     after completion      Feet  
     after completion      Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition  
 JOB NO. 04-1764

BORING G106, G132  
 SHEET 1 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u> 627.4' (G106) Surface Elevation <u>620.1'</u> (G132)	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf			
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○	
								0 1/2 1 1 1/2 2 2 1/2			
								PL + NMC LL			
								0 50 100			
								Rock Quality Designation			
								0 50 100			
	1	SS			Gray CLAY	5-7-11					
-5	2	SS				4-7-9					
	3	SS				7-8-10					
-10	4	SS				6-8-10					
	5	SS				5-8-11					
-15	6	SS			Gray-Brown LOAM	5-7-7					
	7	SS				6-15-25					
-20	8	SS				12-20-39					
	9	SS				12-23-32					
-25	10	SS				38-50/5"					
	11	SS				10-21-26					
-30	12	SS				11-20-25					
	1	PS				5-10-13					
	13	SS	18/18		Gray Silty Clay LOAM	9-12-15					
-35	2	SS	18/18			5-7-11	125				

DRILLING METHOD Hollow Auger  
 DATE DRILLED 12-7, 8-78 & 5-23-84  
 DRILLED BY Simoncini/Roberts  
 LOGGED BY Schweigert/Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 G132 Encountered at 11.0 Feet  
 G132 0 Hours after completion Dry Feet  
 G106 0 Hrs after completion Dry Feet  
 G106 7 Days after completion 15.6 Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G106, G132

JOB NO. 04-1764

SHEET 2 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf				
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○		
								0 1/2 1 1 1/2 2 2 1/2				
								PL +	NMC •	LL x		
								0 50 100				
								Rock Quality Designation				
								0 50 100				
34	4/5	SSSS	18/18		Gray Silty Clay LOAM	4-8-10 3-6-9						
40	4	SS	18/18			3-6-8						
45	1 5/8	SSSSS	18/18			6-9-14 3-6-10						
	6	SS	18/18			3-6-8						
48	1 6/8	SSSS	18/18			4-8-13 4-7-9	126					
50	8	SS	18/18		Organics @ 48.0'	3-6-9						
	9	SS	18/18			2-5-7						
55	10	SS	18/18		Gray Silty CLAY	2-6-7						
	11	SS	18/18			2-6-9						
60	12	SS	18/18			2-4-7	104					
					TOB							

DRILLING METHOD Hollow Auger  
 DATE DRILLED 12-7, 8-78 & 5-23-84  
 DRILLED BY Simoncini/Roberts  
 LOGGED BY Schweigert/Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 G132 Encountered at 11.0 Feet  
 G132 0 Hours after completion Dry Feet  
 G106 0 Hrs after completion Dry Feet  
 G106 7 Days after completion 15.6 Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition

BORING G133(d), G134(s)

JOB NO. 04-1764

SHEET 1 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>620.5'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf				
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○		
	1	SS	18/15		Brown Silt LOAM	2-3-4						
	2	SS	18/18		Brown Silty Clay LOAM	2-3-6						
-5-	3	SS	18/18			3-5-7						
	4	SS	18/18			4-6-10						
-10-	5	SS	18/18		Gray Sandy LOAM	4-5-10						
	6	SS	18/18			18-24-31						
-15-	7	SS	18/18		Brown LOAM	46-67-85						
	1	SS	18/18		Gray Silty Clay LOAM	13-15-18						
-20-	2	SS	18/18			5-13-15						
	3	SS	18/18			5-10-13						
-25-	4	SS	18/18			4-7-10						
	5	SS	18/18			4-6-10						
-30-	6	SS	18/18			3-5-9						
	7	SS	18/18			3-5-9						
-35-	8	SS	18/18			3-6-9						

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-17-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 Encountered at - Feet  
- Hours after completion - Feet  
- after completion - Feet  
- after completion - Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



# RECORD OF SUBSURFACE EXPLORATION

PROJECT Brighton Landfill Addition  
 JOB NO. 04-1764

BORING G133(d), G134(s)  
 SHEET 2 OF 2

DEPTH (ft)	SAMPLE			SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification)  Soil Classification System <u>USDA</u>  Surface Elevation <u>620.5'</u>	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf							
	NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)					SVΔ	QP/2□	QU/2○	PL	NMC	LL		
8	SS				Gray Silty Clay LOAM										
9	SS	18/18				3-6-9									
10	SS	18/18			Gray Silty CLAY	5-6-9									
11	SS	18/18				4-5-9									
12	SS	18/18				2-5-8									
13	SS	18/18				3-5-8									
14	SS	18/18				3-4-8									
15	SS	18/0 Push			Gray CLAY	7-9-13									
16	SS	18/0 Push			TOB	3-4-8									

DRILLING METHOD Hollow Auger  
 DATE DRILLED 5-17-84  
 DRILLED BY Roberts  
 LOGGED BY Maniaci/Maxeiner  
 PIEZOMETER Yes

**GROUNDWATER LEVELS**  
 Encountered at - Feet  
 Hours after completion - Feet  
 after completion - Feet  
 after completion - Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.



John Mathes & Associates, Inc.



## GENERAL NOTES

The number of borings is based on topographic and geologic factors; the magnitude of loading; the size, shape, and value of the structure; consequences of failure; and other factors. The type and sequence of sampling is selected to reduce the possibility of undiscovered anomalies and increase drilling efficiency. Attempts are made to detect and/or identify occurrences during drilling and sampling such as encounter of water, boulders, gas, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation in driving resistance, unusual odors, etc. However, lack of mention of such variations does not preclude their presence.

Although attempts are made to obtain stabilized groundwater levels, the levels shown on the Records of Subsurface Exploration may not have stabilized, particularly in more impermeable cohesive soils. Consequently, the indicated groundwater levels may not represent present or future levels. Groundwater levels may vary significantly over time due to the effects of precipitation, infiltration, or other factors not evident at the times indicated.

Unless otherwise noted, soil classifications indicated on the Records of Subsurface Exploration are based on visual observations and are not the result of classification tests. Although visual classifications are performed by experienced technicians or engineers, classifications so made may not be conclusive.

Generally, variations in texture less than one foot in thickness will be described as seams while thicker zones will be logged as individual strata. However, minor anomalies and changes of questionable lateral extent may appear only in the verbal description. The lines indicating changes in strata on the Records of Subsurface Exploration are approximate boundaries only as the actual material change may be between samples or may be a gradual transition. Changes in materials observed by field or laboratory personnel are indicated by solid lines whereas estimated material changes between recovered samples are indicated by dashed lines.

Samples chosen for laboratory testing are selected in such a manner so as to determine selected physical characteristics of each material encountered. However, as samples are recovered only intermittently and only representative samples are tested, the results of such tests may not conclusively represent the characteristics of all subsurface materials present.





# NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION

## BLOWS

Number of impacts of a 140 pound hammer falling a distance of 30 inches to cause a standard split-barrel sampler, 1½ inches I.D., to penetrate a distance of 6 inches. The number of impacts for the first 6 inches of penetration is known as the seating drive. The sum of the impacts for the last 12 inches of penetration is the Standard Penetration Test Resistance or "N" value. For example, if Blows = 6-8-9, "N" = 8+9 or 17.

## OTHER NOTATION

- 50/2 - Impacts to cause sampler to penetrate the indicated number of inches
- WR - Sampler penetrated under the static loading of the weight of the drill rod
- WH - Sampler penetrated under the static loading of the weight of the hammer and drill rod
- X - No blow count

## LABORATORY TEST SYMBOLS

- |          |                            |    |                                   |
|----------|----------------------------|----|-----------------------------------|
| $D_{10}$ | - Effective Particle Size  | PL | - Plastic Limit                   |
| $k_v$    | - Vertical Permeability    | QP | - Calibrated Penetrometer         |
| LL       | - Liquid Limit             | QU | - Unconfined Compressive Strength |
| NMC      | - Natural Moisture Content | SV | - Field Shear Vane                |





# NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION

## DRILLING, SAMPLING, & GROUNDWATER LEVEL SYMBOLS

<b>AR</b> - Auger Refusal	<b>3P</b> - Piston Sample, 3 Inches Dia.
<b>AS</b> - Auger Sample	<b>5P</b> - Piston Sample, 5 Inches Dia.
<b>BS</b> - Bag or Bulk Sample	<b>RB</b> - Rotary Rock Bit
<b>DB</b> - Drag Bit	<b>SR</b> - Split-Barrel Refusal
<b>DCI</b> - Dry Cave-In	<b>SS</b> - Standard 1½ Inches Dia. Split-Barrel Sample
<b>DS</b> - Denison Sample	<b>TOB</b> - Termination of Boring
<b>FA</b> - Flight Auger	<b>2T</b> - Thin-Walled Tube Sample, 2 Inches Dia.
<b>HA</b> - Hollow-Stem Auger	<b>3T</b> - Thin-Walled Tube Sample, 3 Inches Dia.
<b>HD</b> - Hand Auger	<b>TR</b> - Thin-Walled Tube Refusal
<b>LS</b> - Large 2½ Inches Dia. Split-Barrel Sample	<b>WB</b> - Wash Bore
<b>NC</b> - NX Conventional Rock Core	<b>WCI</b> - Wet Cave-In
<b>NW</b> - NX Wireline Rock Core	<b>WS</b> - Wash Sample
<b>OS</b> - Osterberg Sample	
<b>2P</b> - Piston Sample, 2 Inches Dia.	

## DESCRIPTION ABBREVIATIONS

<b>App</b> - Apparent	<b>Med</b> - Medium
<b>Bk</b> - Black	<b>Mot</b> - Mottled
<b>Bld</b> - Boulder, Boulders	<b>Org</b> - Organic, Organics
<b>Br</b> - Brown, Brownish	<b>Oxi</b> - Oxidation, Oxidized
<b>Calc</b> - Calcareous	<b>Pkt</b> - Pocket, Pockets
<b>Cbl</b> - Cobble, Cobbles	<b>Pt</b> - Peat, Peaty
<b>Cl</b> - Clay, Clayey	<b>Rd</b> - Red, Reddish
<b>Co</b> - Coarse	<b>Rt</b> - Root, Roots
<b>Conc</b> - Concretion, Concretions	<b>Sa</b> - Sand, Sandy
<b>Dk</b> - Dark	<b>Sh</b> - Shale, Shaley
<b>Fi</b> - Fine	<b>Si</b> - Silt, Silty
<b>Frac</b> - Fractured	<b>Slk</b> - Slickenside, Slickensides
<b>Frag</b> - Fragment, Fragments	<b>Sm</b> - Seam, Seams
<b>Gr</b> - Gray, Grayish	<b>Sp</b> - Spot, Spots
<b>Grv</b> - Gravel, Gravelly	<b>Stn</b> - Stain, Stains
<b>Inb</b> - Interbedded	<b>Stk</b> - Streak, Streaks
<b>Jt</b> - Joint, Joints	<b>Tr</b> - Trace
<b>Lig</b> - Lignite	<b>v</b> - Very
<b>Ls</b> - Limestone	<b>w/</b> - With
<b>Lt</b> - Light	<b>Yel</b> - Yellow, Yellowish

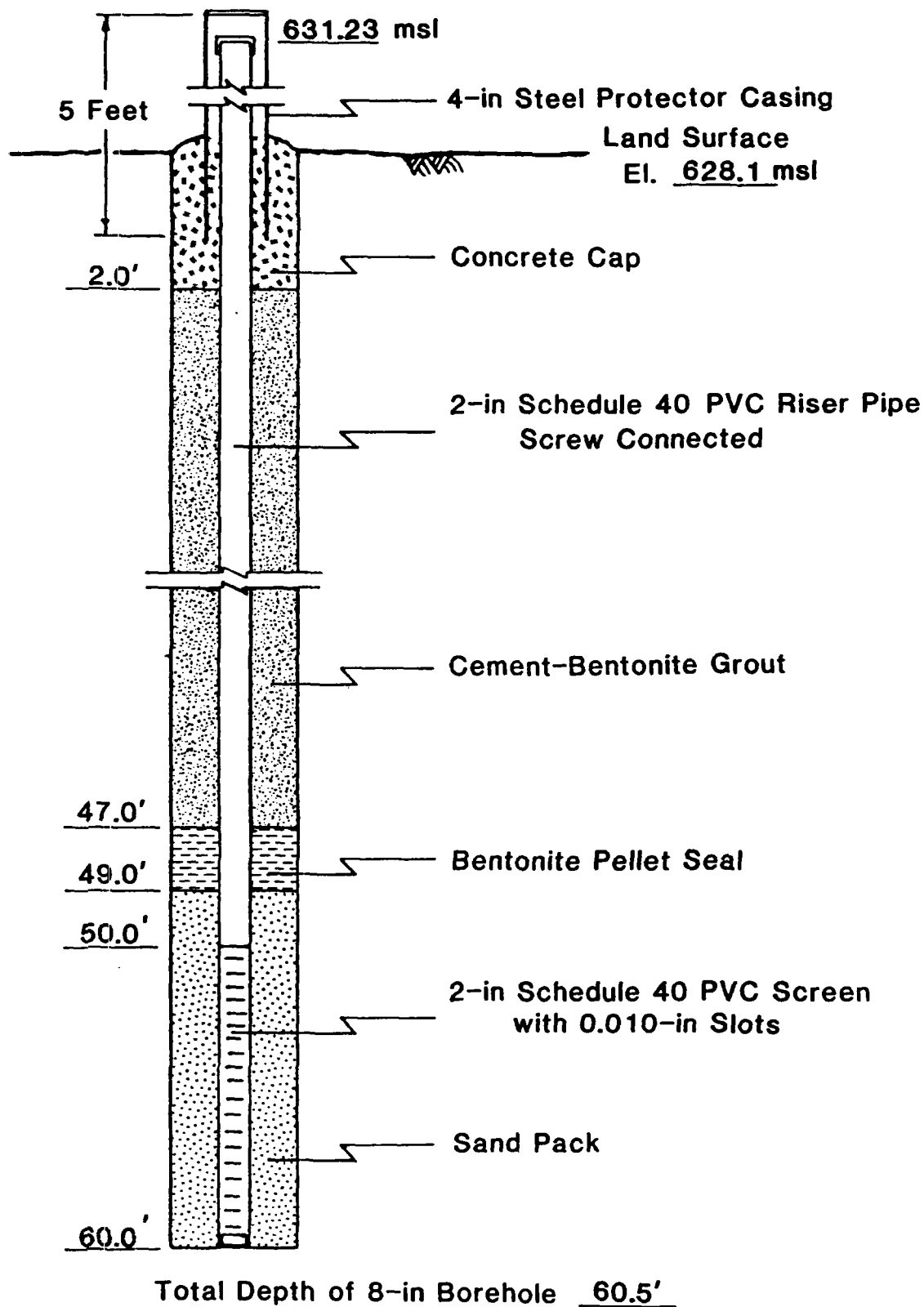




APPENDIX B  
EXISTING MONITORING WELL  
CONSTRUCTION DIAGRAMS







**MONITOR WELL NO. G - 113 (D)**

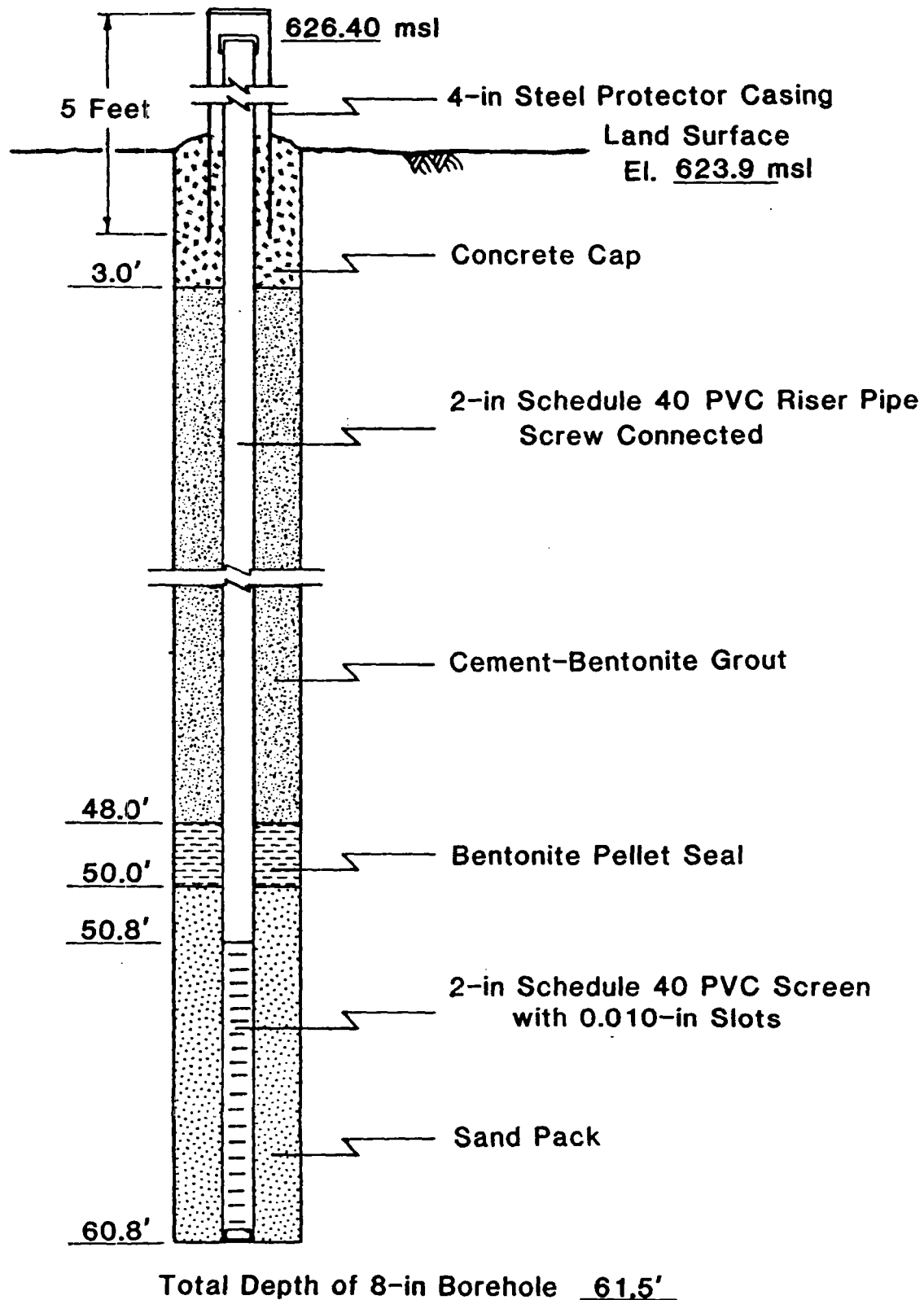
**Brighton Landfill**

Not to Scale



**John Mathes & Associates, Inc.**





**MONITOR WELL NO. G - 115 (D)**

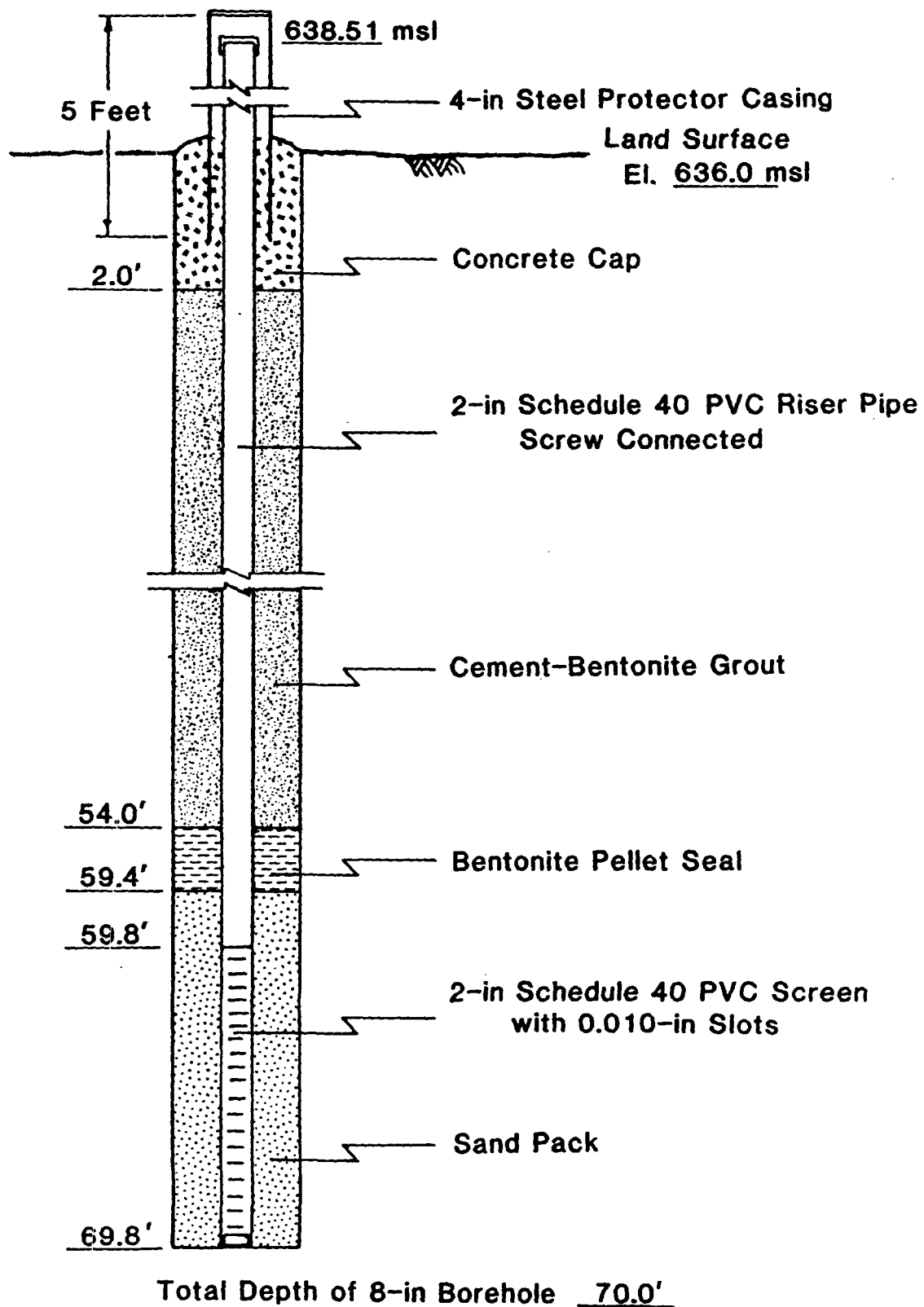
**Brighton Landfill**

Not to Scale



**John Mathes & Associates, Inc.**





MONITOR WELL NO. G - 117 (D)

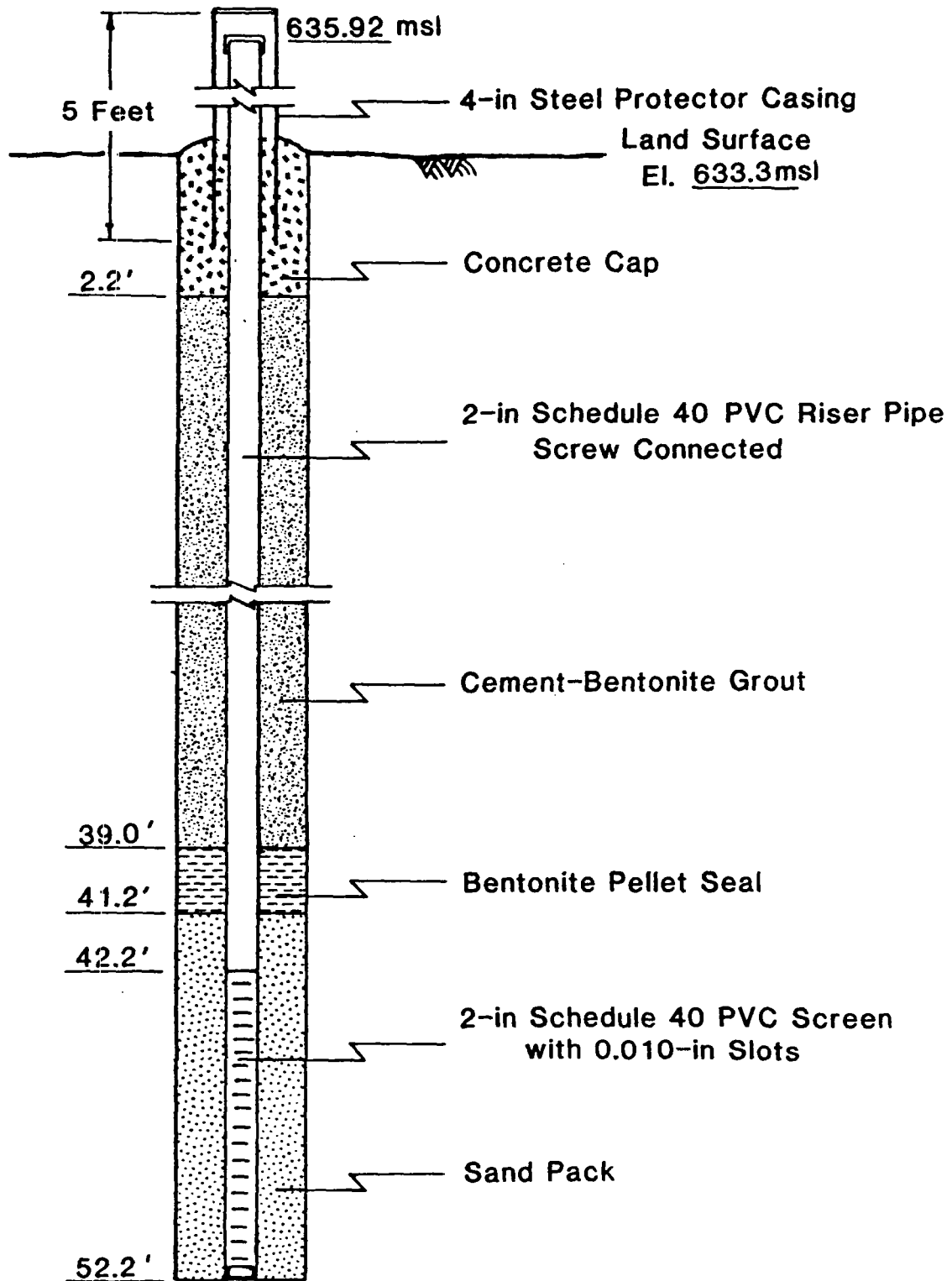
Brighton Landfill

Not to Scale



John Mathes & Associates, Inc.





Total Depth of 8-in Borehole 53.0'

MONITOR WELL NO. G - 119 (D)

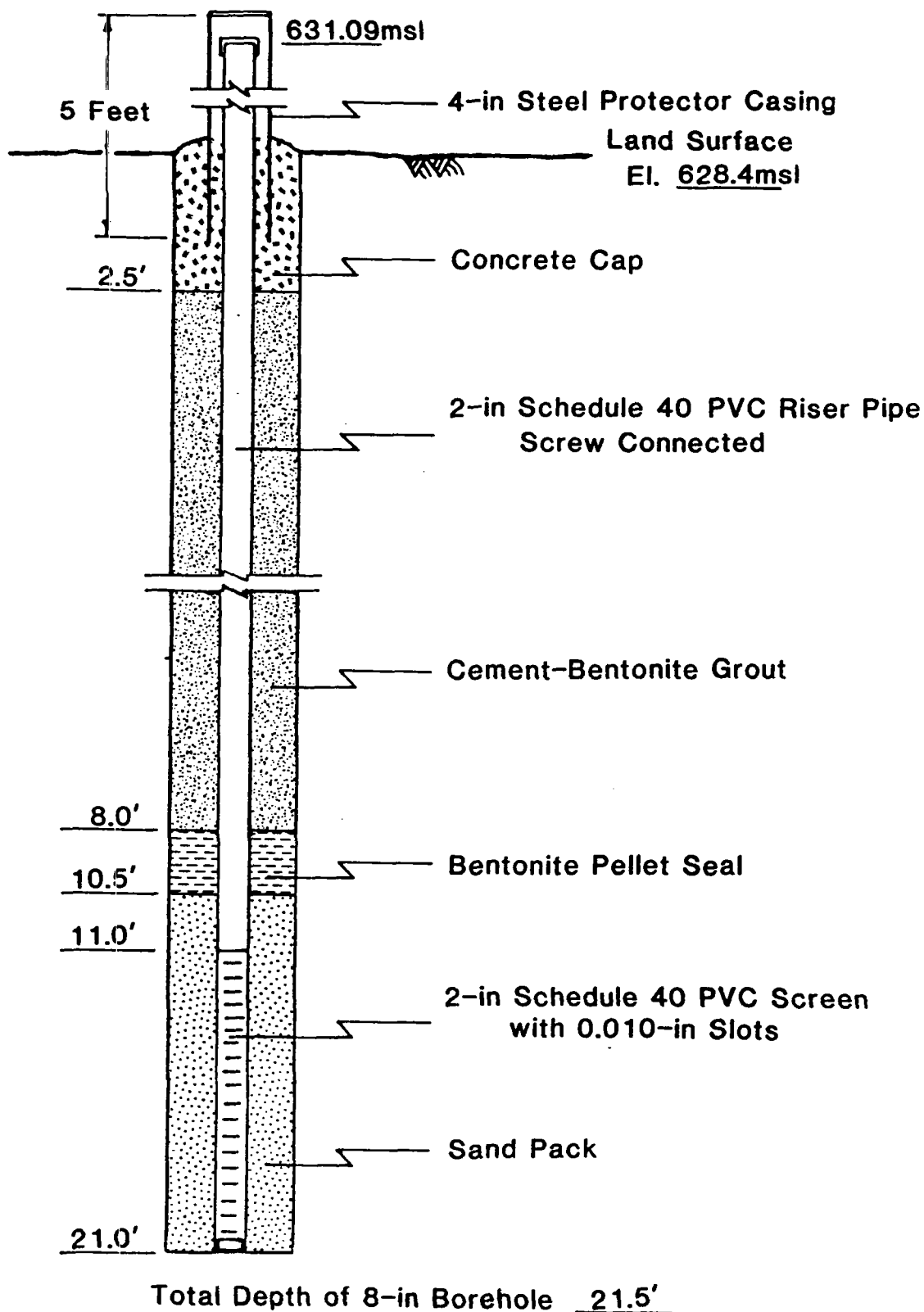
Brighton Landfill

Not to Scale



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MONITOR WELL NO. G - 120 (S)

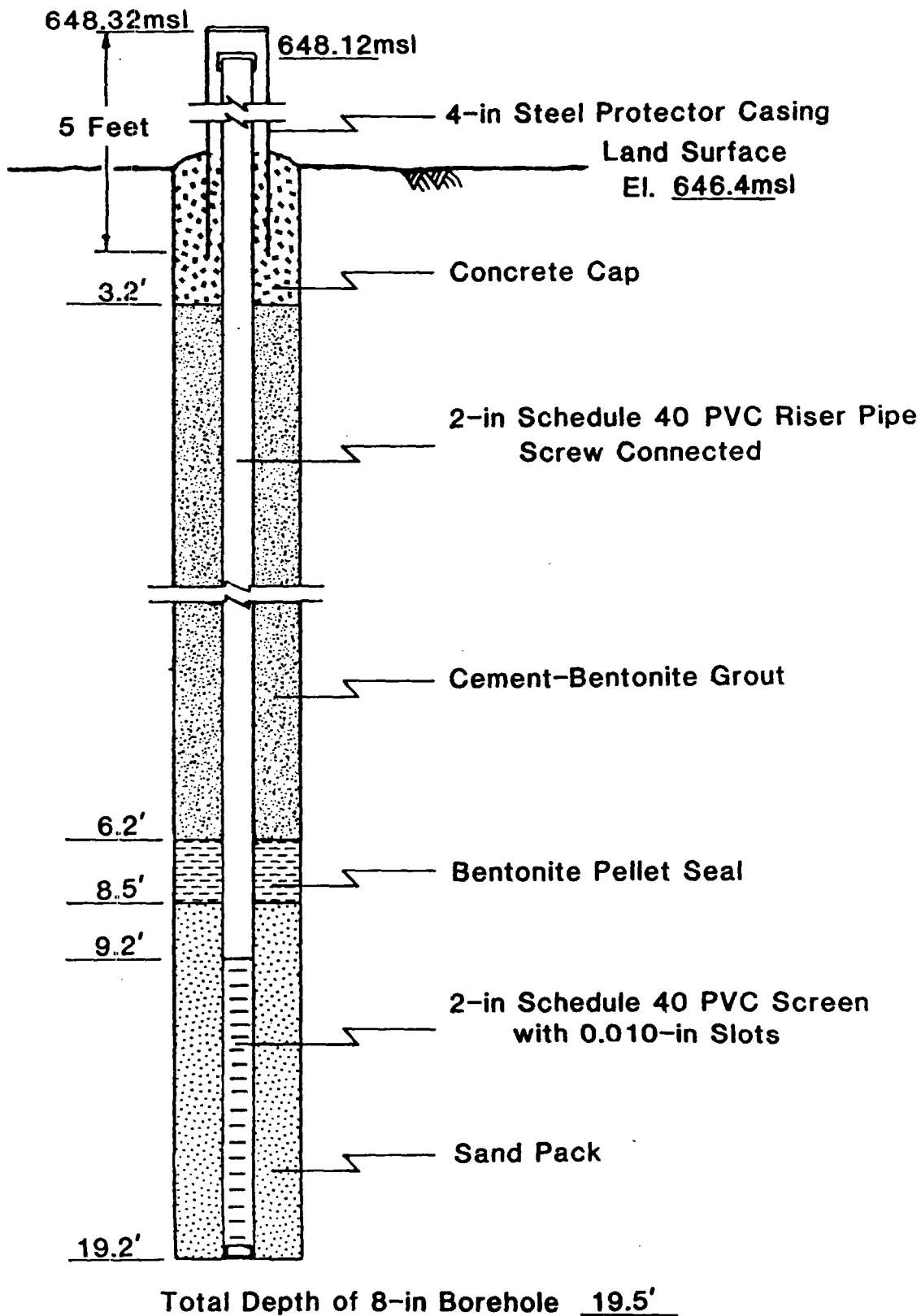
Not to Scale



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Brighton Landfill





MONITOR WELL NO. G - 121 (S)

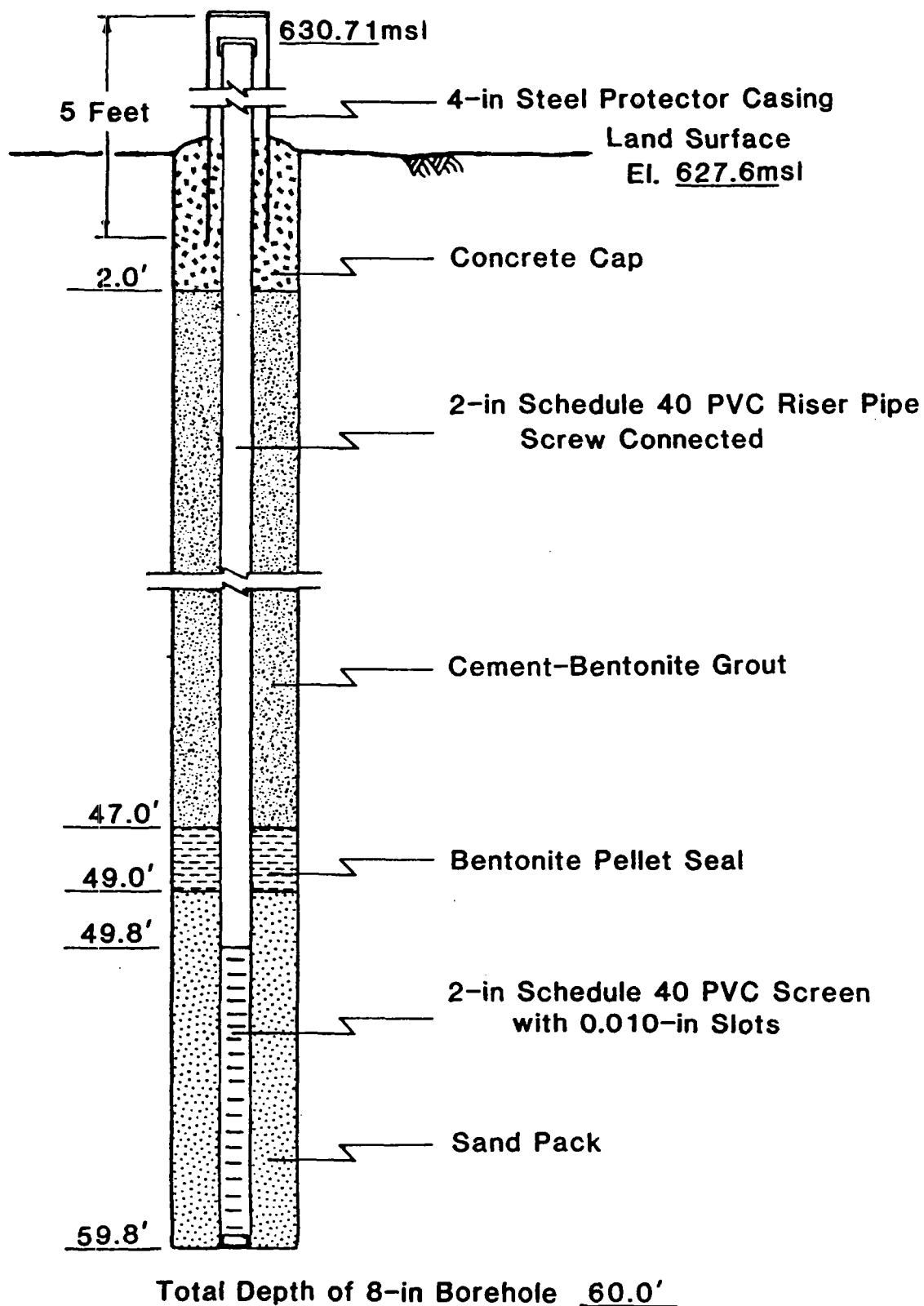
Brighton Landfill

Not to Scale



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MONITOR WELL NO. G - 123 (D)

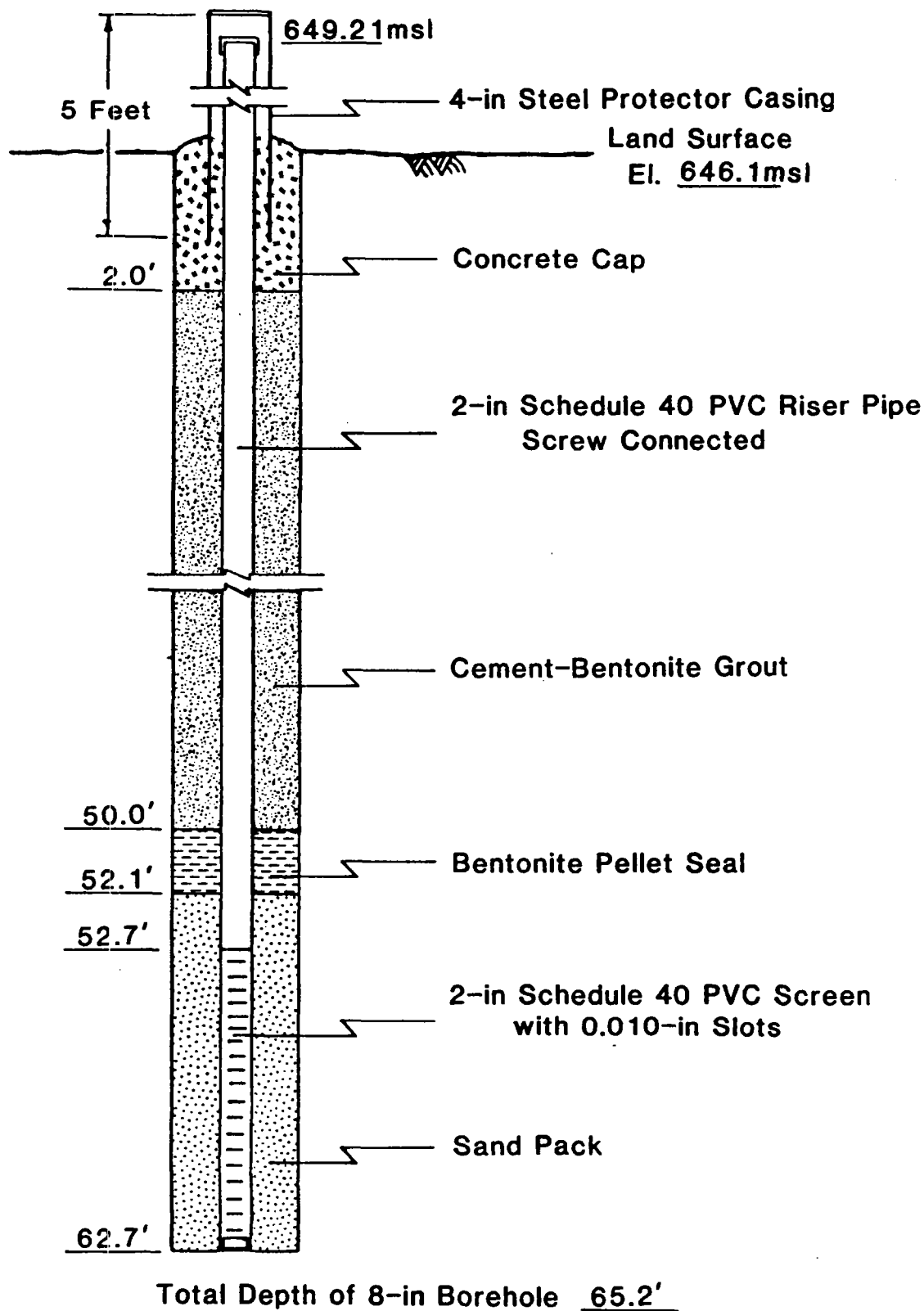
Brighton Landfill

Not to Scale



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**MONITOR WELL NO. G- 124 (D)**

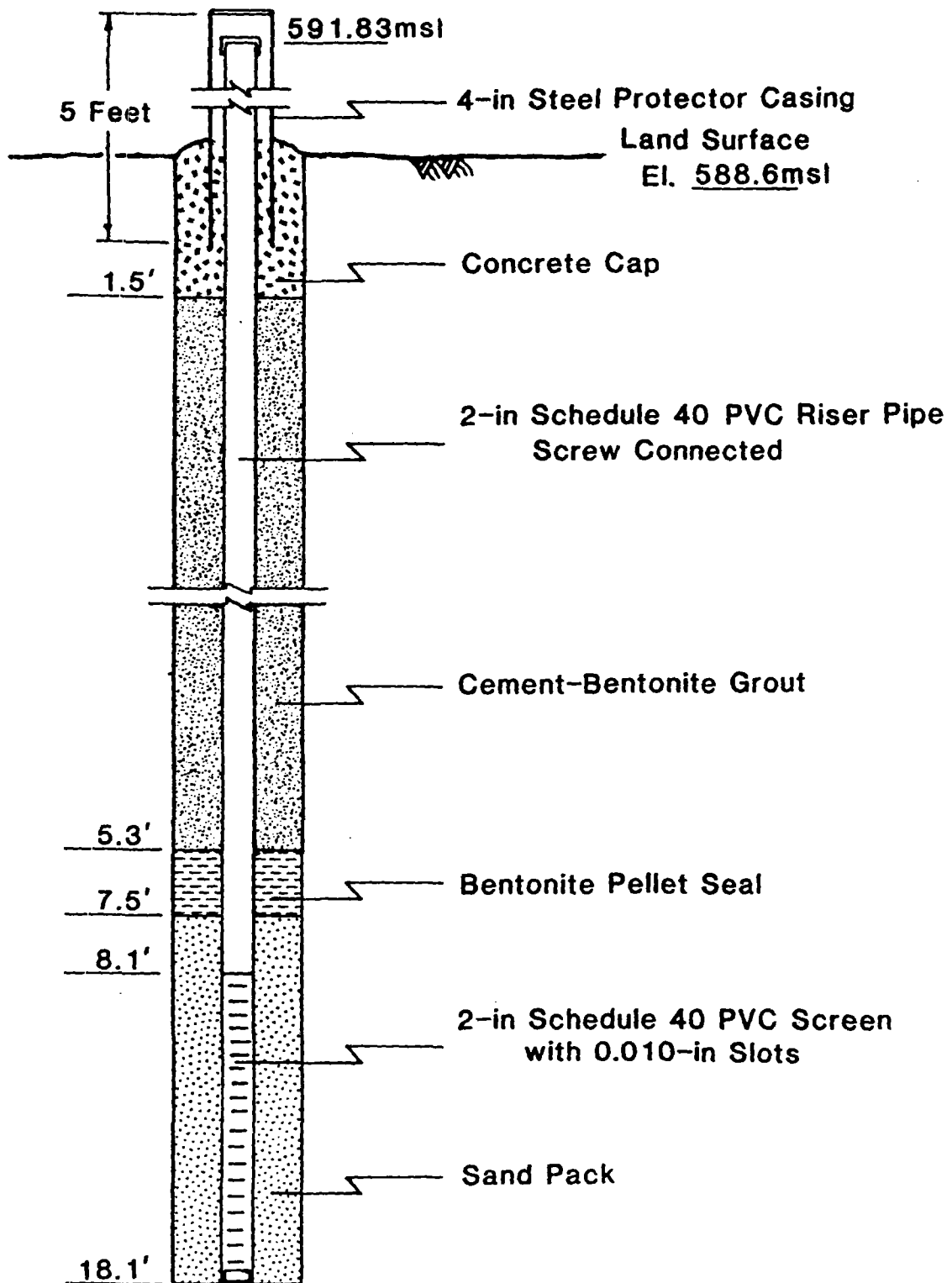
**Brighton Landfill**

Not to Scale



**John Mathes & Associates, Inc.**





Total Depth of 8-in Borehole 18.2'

MONITOR WELL NO. G-128 (S)

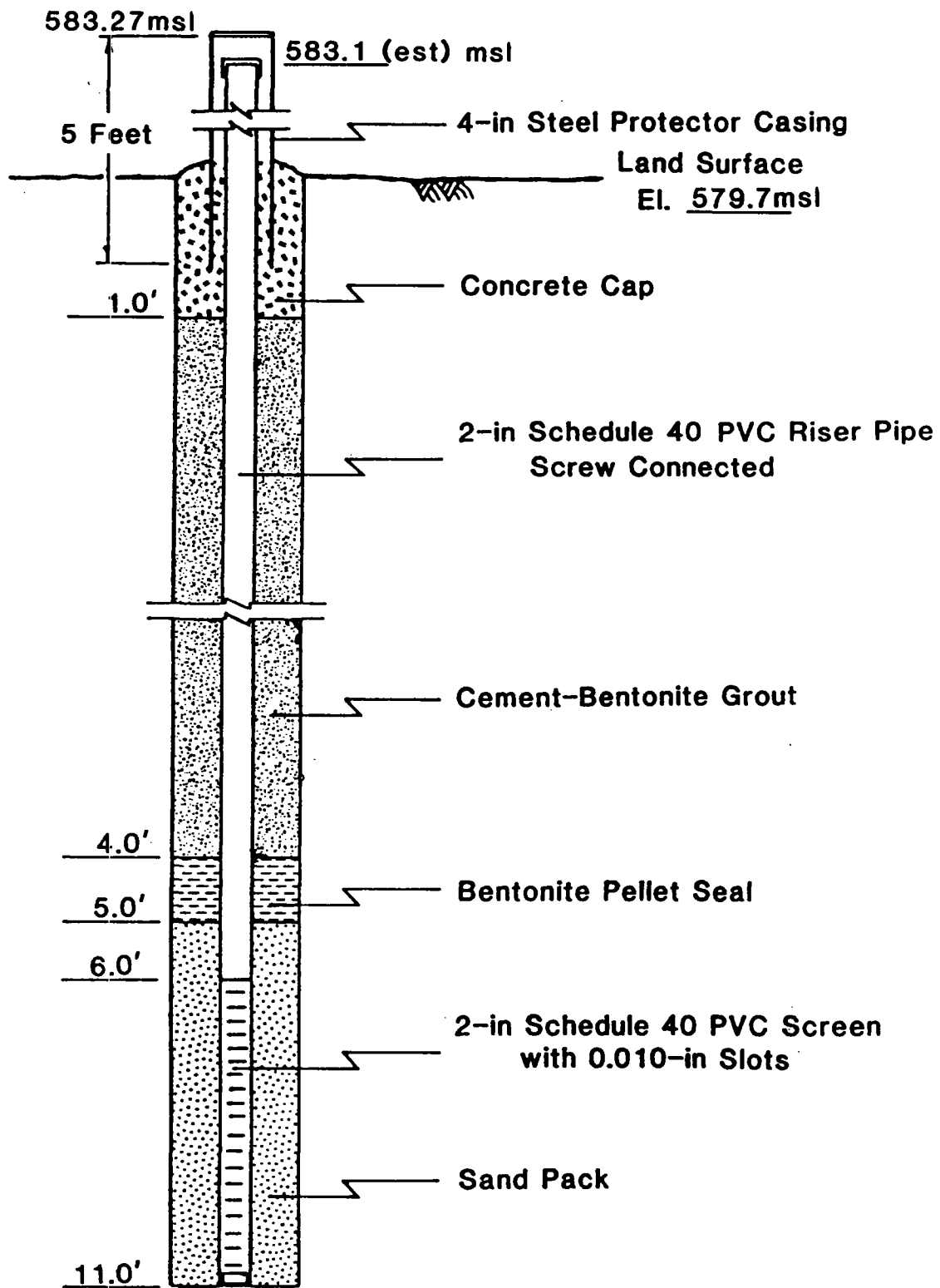
Brighton Landfill

Not to Scale



John Mathes & Associates, Inc.





Total Depth of 8-in Borehole 11.0'

MONITOR WELL NO. G-129 (S)

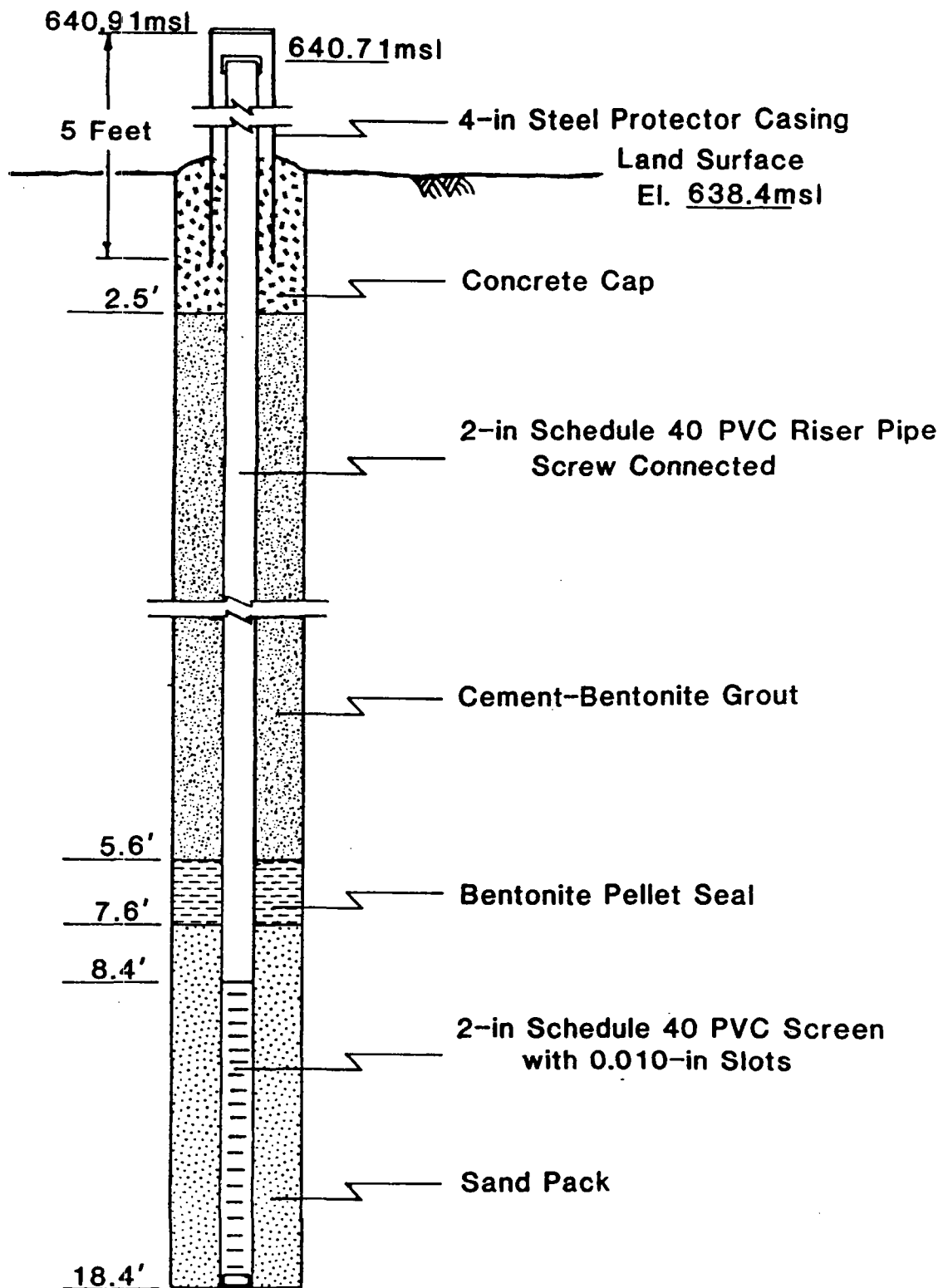
Brighton Landfill

Not to Scale



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Total Depth of 8-in Borehole 18.5'

MONITOR WELL NO. G-130 (S)

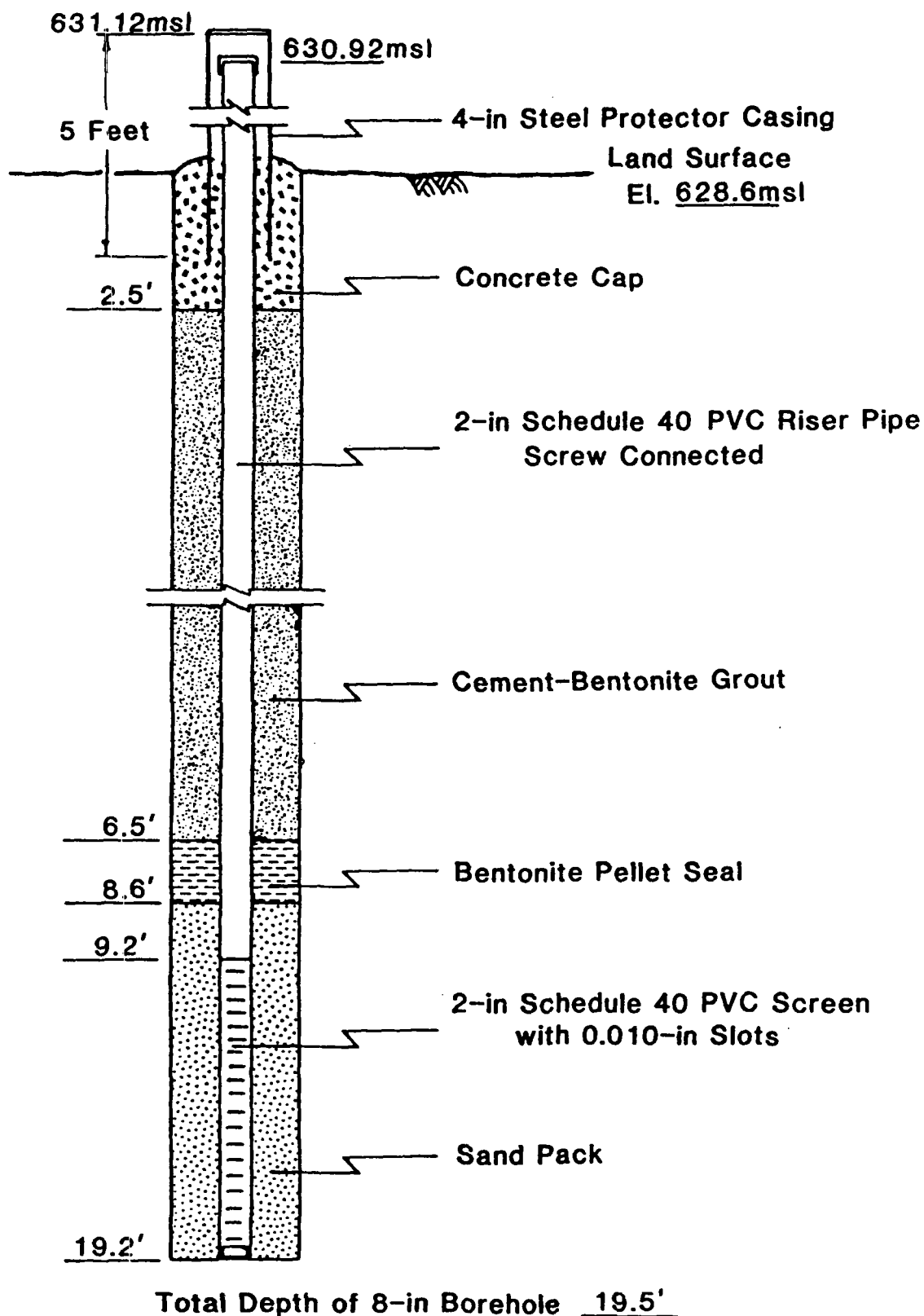
Brighton Landfill

Not to Scale



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MONITOR WELL NO. G-131 (S)

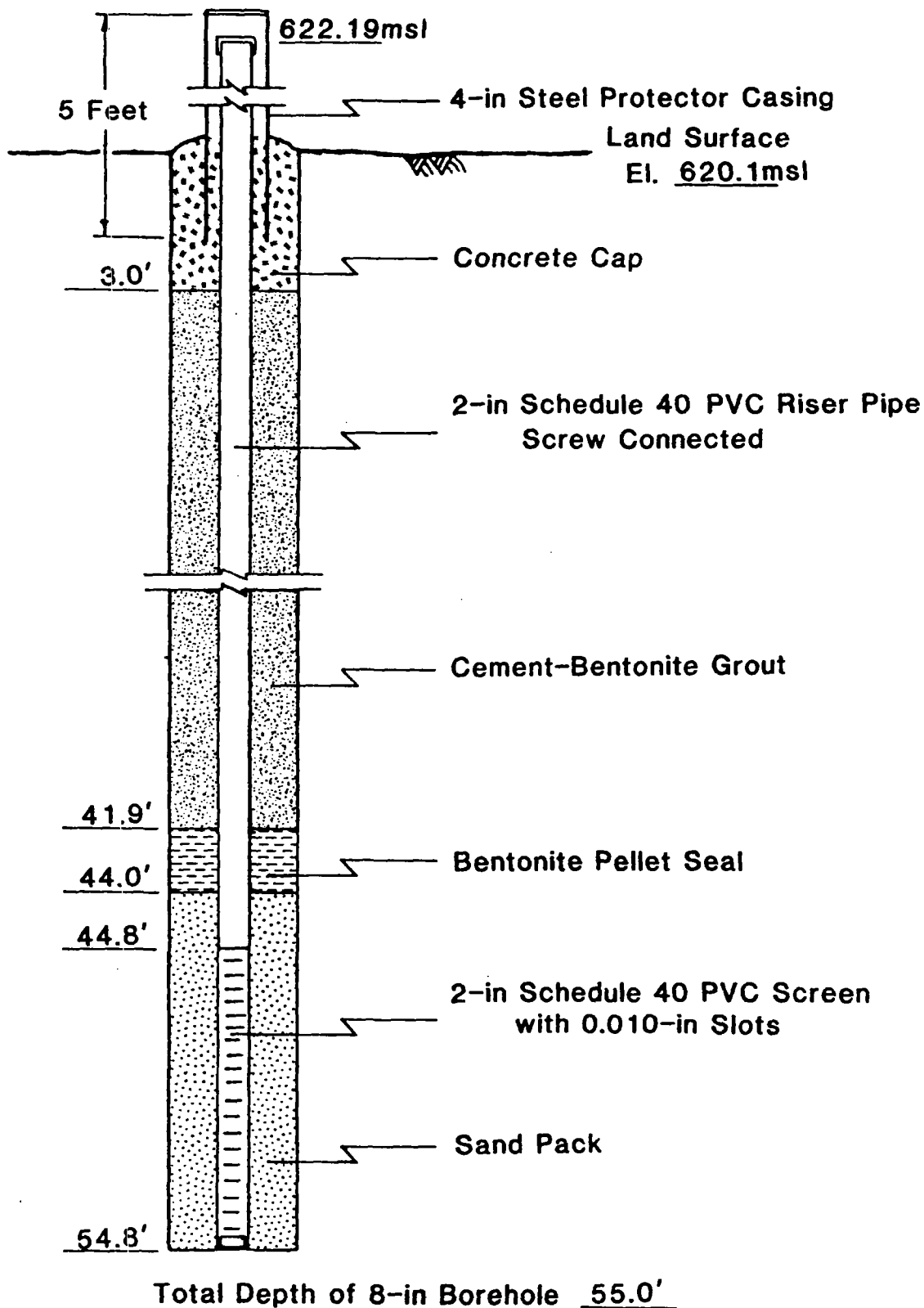
Brighton Landfill

Not to Scale



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**MONITOR WELL NO. G-132 (D)**

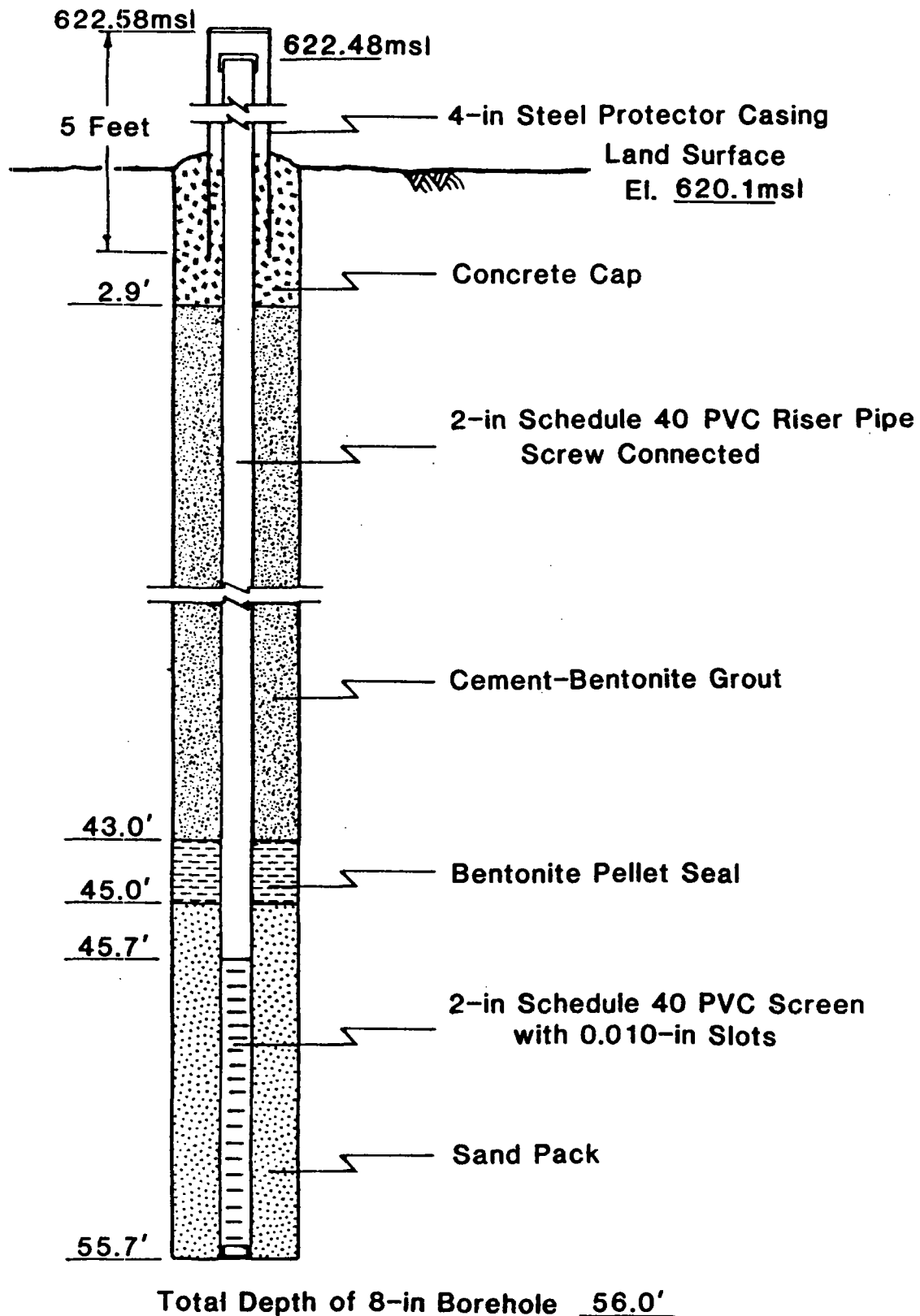
**Brighton Landfill**

Not to Scale



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MONITOR WELL NO. G-133 (D)

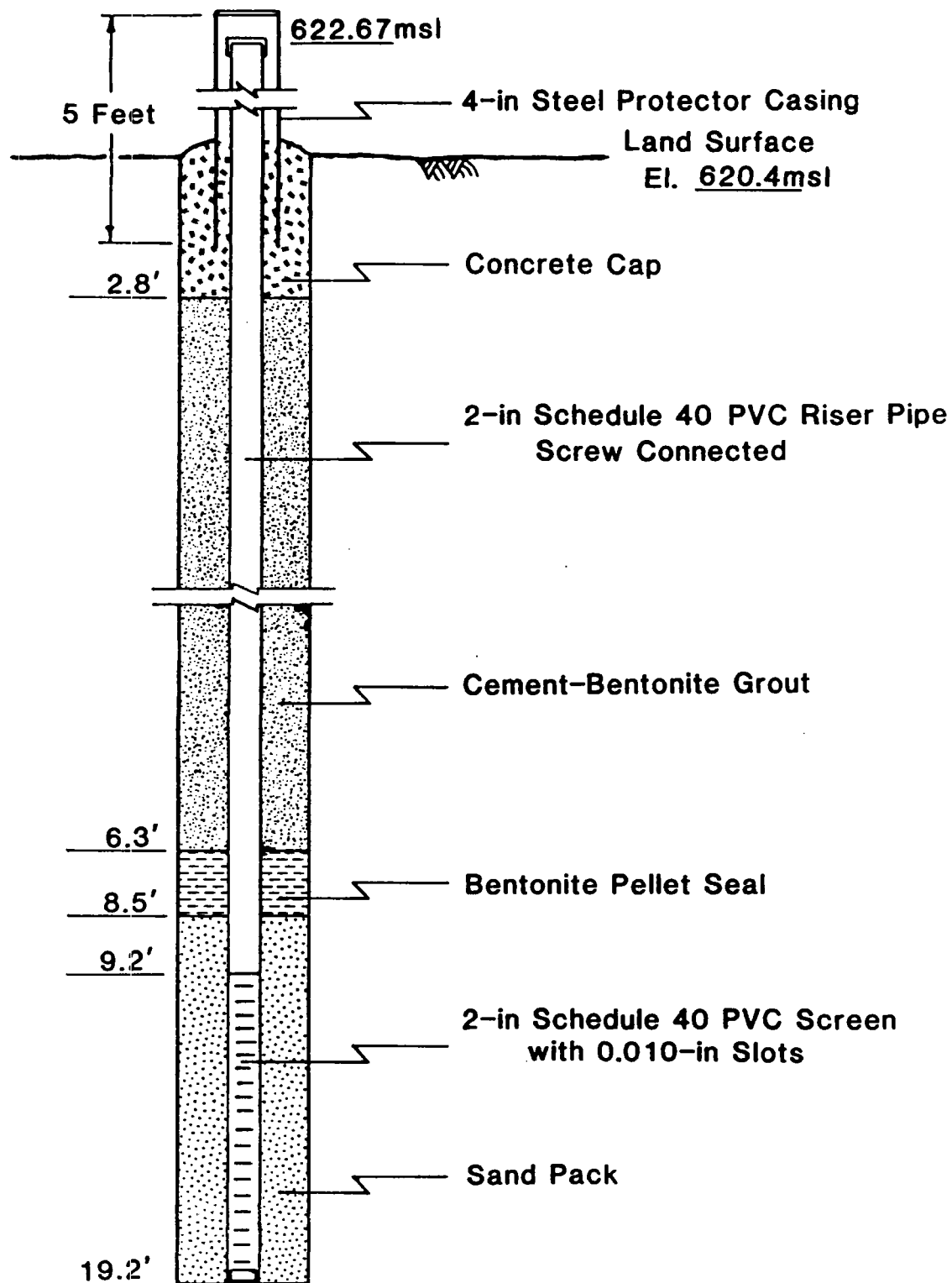
Brighton Landfill

Not to Scale



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Total Depth of 8-in Borehole 19.5'

MONITOR WELL NO. G-134 (S)

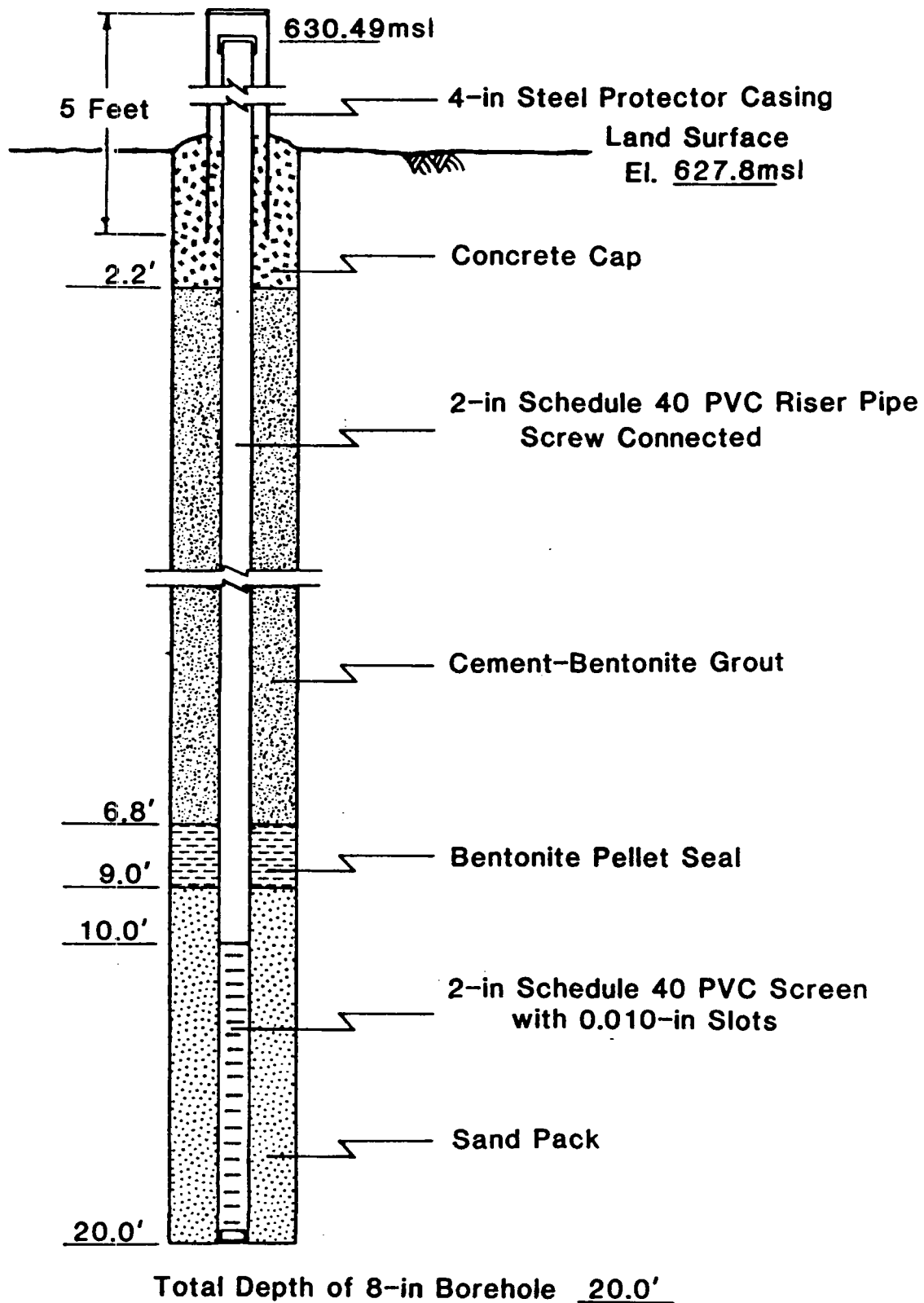
Not to Scale



Brighton Landfill

John Mathes & Associates, Inc.





MONITOR WELL NO. G-135 (S)

Brighton Landfill

Not to Scale



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APPENDIX - C

GROUND-WATER QUALITY ASSESSMENT PROGRAM  
INFORMATION FORM



APPENDIX C

GROUND-WATER QUALITY ASSESSMENT PROGRAM  
INFORMATION FORM

Company Name: Brighton Landfill ; EPA I.D.#: ILD0000667139  
Company Address: Craig Lake Road Brighton, Illinois 62012  
LPC 1178020003  
LPC 1178020001  
Inspector's Name: M. Dilday ; Date: 12/11/84

1.0 Background

1.1 List the constituents (contaminants) originating from the waste management area: (use separate sheet if necessary) per M. Rapps & Associates: sulfates, TDS, alkalinity, hardness, Na, Fe, Mn, Pb, Cd, Cr

1.2 Have the concentrations of the hazardous waste or hazardous waste constituents shown significant increases in:

- upgradient monitoring wells (Y/N) Y
- downgradient monitoring wells (Y/N) Y

1.2.1 List or indicate on a map, the wells which have shown significant increases: (use separate sheet if necessary) see attachment C

1.3 Were the significant increases in contaminant concentration determined through the use of the student's t-Test? (Y/N) N

If no,

1.3.1 Explain procedure used analytical results

1.4 Has the possibility of error (e.g., laboratory) been eliminated? (Y/N) Y

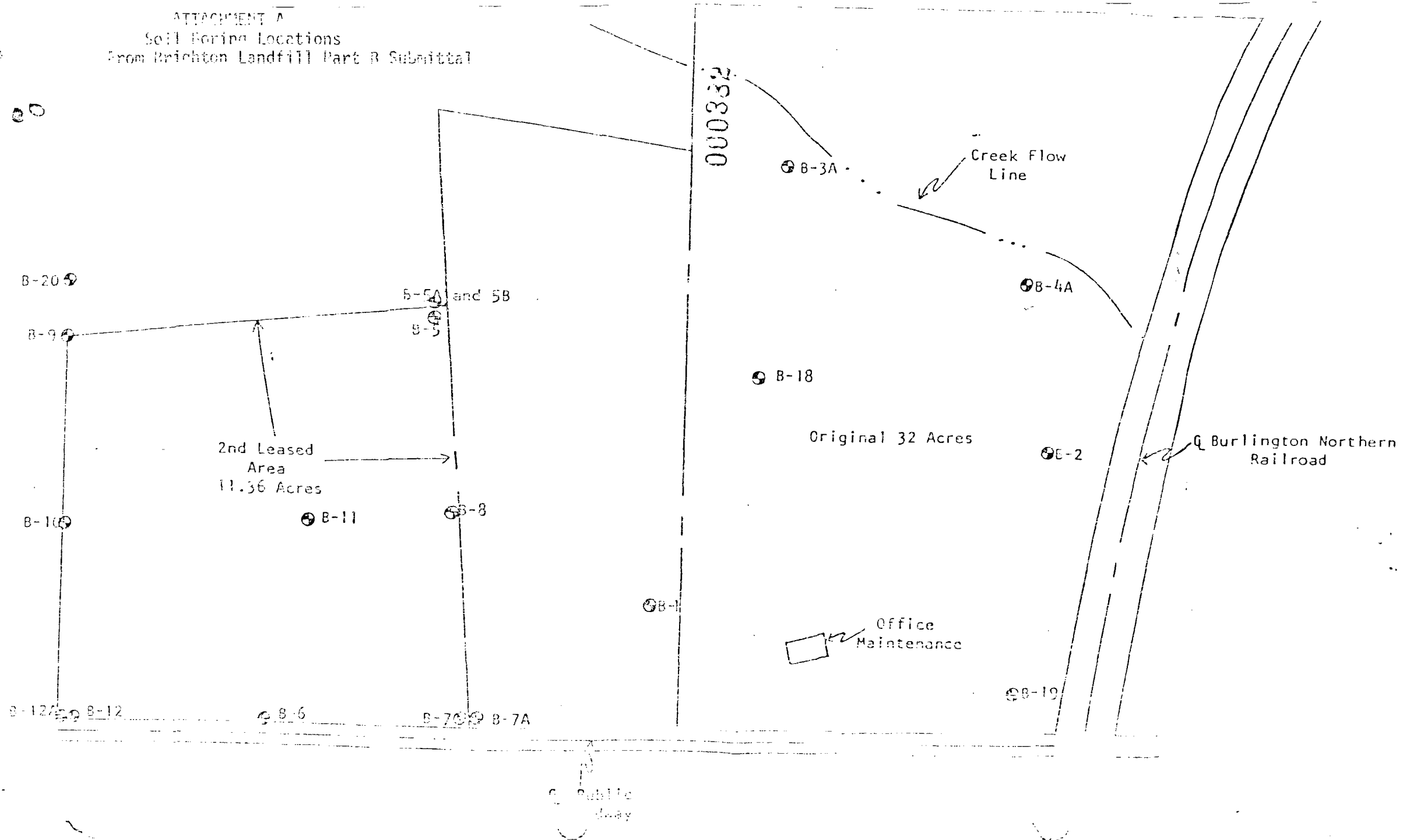
1.4.1 Explain the facility stated that the assessment was not triggered by a lab error in their April, 1980 notification to the Director



WELL NO.							
GROUND ELEVATION							
TOTAL DEPTH							
WELL CASING	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	STICK-UP						
	TOP ELEVATION						
	BOTTOM ELEVATION						
WELL SCREEN	DEPTH TOP/BOTTOM						
	TYPE MATERIAL						
	DIAMETER						
	LENGTH						
	SLOT SIZE						
	TOP ELEVATION						
	BOTTOM ELEVATION						
OPEN HOLE OR SAND/GRAVEL PACK	DEPTH TOP/BOTTOM						
	DIAMETER						
	LENGTH						
	TOP ELEVATION						
	BOTTOM ELEVATION						

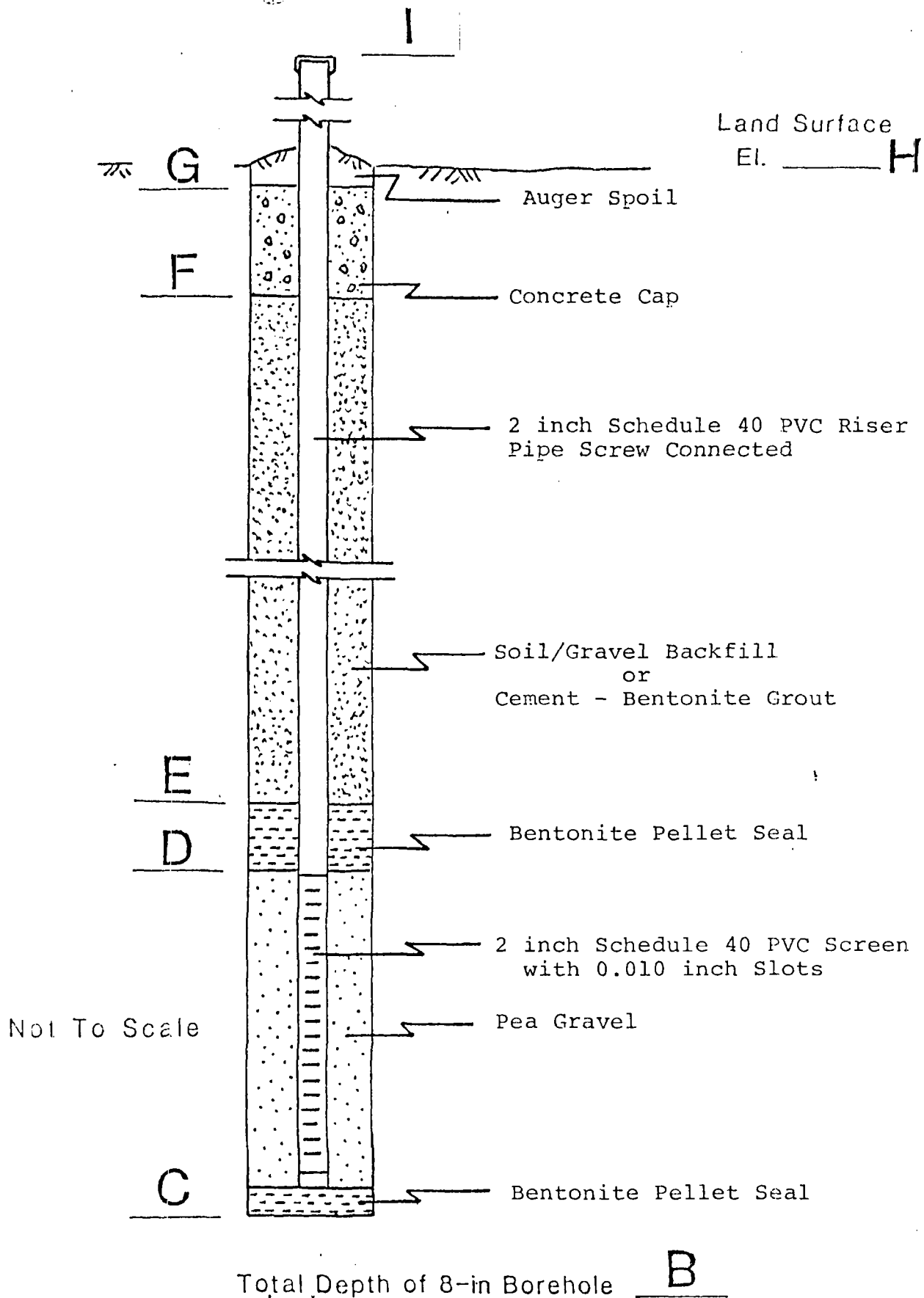


ATTACHMENT A  
Soil Boring Locations  
From Brighton Landfill Part B Submittal



Scale





(Keyed to Table 1)

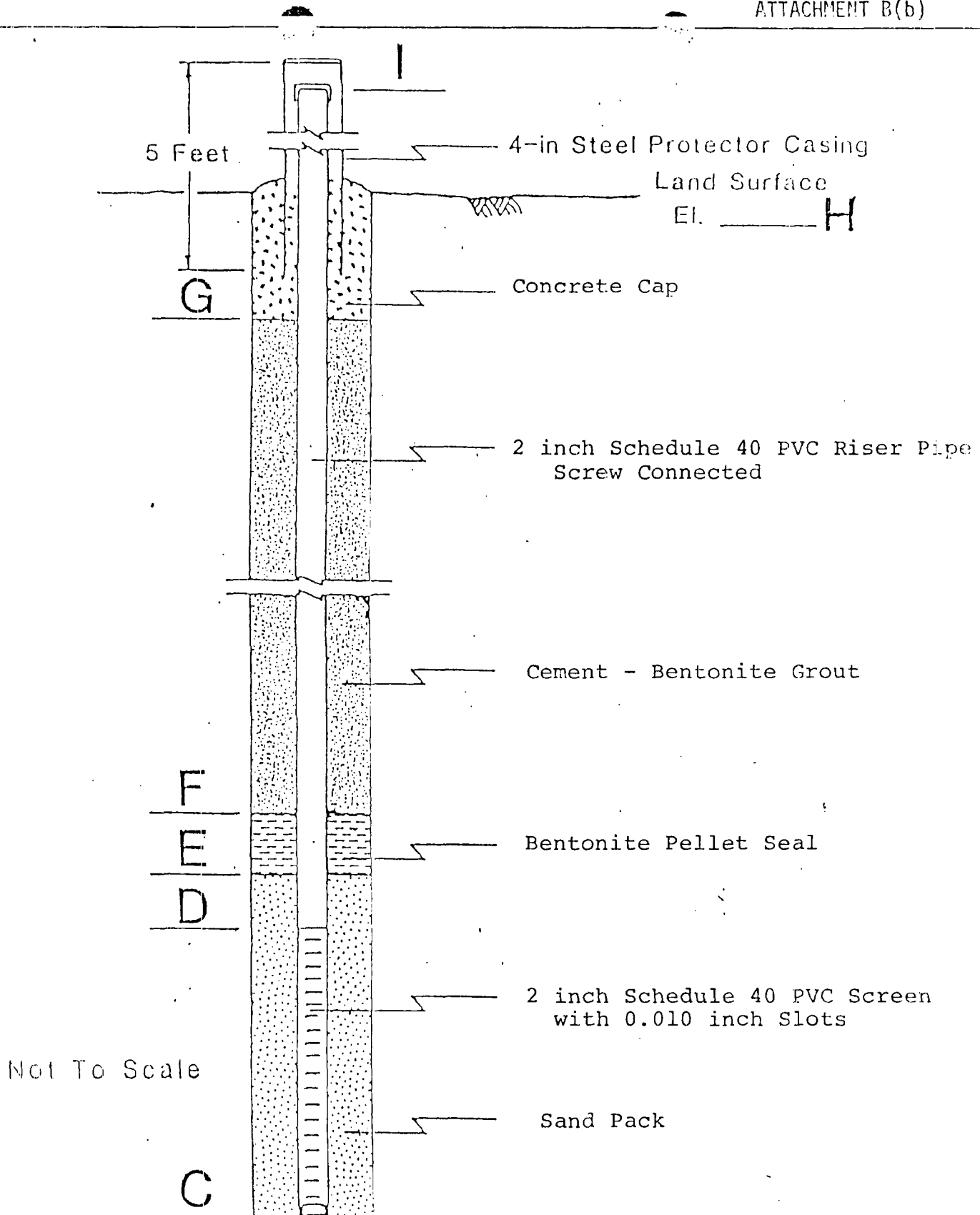
MONITOR WELL NO. A



Monitor Well A	Total Depth B	Screen Interval C - D	Bentonite Interval D - E	Backfill/ Grout Interval E - F	Concrete Interval F	Auger Spoil Interval G	Land Surface Elevation H	Top of PVC Pipe Elevations I
G 101(s)	43.0	43 - 38	38 - 35	35 - 10	10 - 0	-	630.1	632.10
✓ G 102 A(s)	31.0	31 - 11	11 - 9	9 - 0	-	-	591.0	594.04
✓ G 103(d)	30.0	29.5 - 24.5	24.5	24.5 - 0	-	-	589.4	592.12
✓ G 104(d)	30.0	30 - 25	25 - 24	24 - 1	1 - 0	-	580.0	583.75
G 112(s)	28.0	28 - 18	18 - 16.5	16.5 - 2	2 - 0	-	637.9	641.36
✱ G 106(s)	32.0	31 - 19	19 - 18	18 - 3	3 - 1.5	1.5	619.4	621.57
G 114(s)	24.0	24 - 14	14 - 12.5	12.5 - 1	1 - 0	-	624.7	626.39
✱ G 108(s)	32.5	31 - 21	21 - 19.5	19.5 - 1	1 - 0	-	644.6	648.64
G 116(s)	31.5	31.5 - 23	23 - 20	20 - 1	1 - 0	-	636.9	638.55
G 110(s)	31.5	31.5 - 22	22 - 20.5	20.5 - 1	1 - 0	-	634.4	636.56
G 118(s)	29.5	28 - 18	18 - 16.5	16.5 - 1	1 - 0	-	632.0	633.17
G 122(P)	64.5	64.5 - 54.5 (est.)	-	54.5 - 0 (est.)	-	-	645.9	646.88
G 125(P)	75.5	75.5 - 65.5 (est.)	-	65.5 - 0 (est.)	-	-	639.1	639.65
G 126(P)	50.0	50 - 40 (est.)	-	40 - 0 (est.)	-	-	612.2	617.63
G 127(P)	60.5	60.5 - 50.5 (est.)	-	50.5 - 0 (est.)	-	-	630.0	635.55

Table 1. Monitor Well Construction Data-Brighton Sanitary Landfill (January 1984)



Total Depth of 8-in Borehole B

(Keyed to Table 2)

MONITOR WELL NO. A



Monitor Well A	Total Depth B	Screen Interval C - D	Riser Length D	Sand Pack Interval C - E	Bentonite Interval E - F	Grout Interval F - G	Concrete Interval G	Protector Interval	Land Surface Elevation H	Top of PVC Pipe Elevation I
G 113(d)	570.73 60.5	60 - 50	+ 3.1	60.5-49.0	49 - 47	47 - 2	2 - 0	1.7-3.3	628.1	631.23
G 115(d)	566.91 59.5	59 - 49	+ 2.5	59.5-48.5	48.5-46	46 - 2.5	2.5 - 0	2.4-2.6	623.9	626.40
G 117(d)	562.51 70.0	69.8-59.8	+ 2.5	69.8-59.4	59.4-54	54 - 2.5	2.5 - 0	2.4-2.6	636.0	638.51
G 119(d)	582.92 53.0	52.2-42.2	+ 2.6	52.2-41.2	41.2-39	39 - 2.2	2.2 - 0	2.3-2.7	633.3	635.92
G 120(s)	21.4	21 - 11	+ 2.7	21-10.5	10.5-8	8 - 2.5	2.5 - 0	2.1-2.9	628.4	631.09
G 121(s)	18.3	18 - 8	+ 1.7	18.3-7.5	7.5-5.5	5.5-3.2	3.2 - 0	3.0-2.0	646.4	648.32
G 123(d)	570.71 60.0	59.8-49.8	+ 3.1	60 - 49	49 - 47	47 - 25	2.5 - 0	1.7-3.3	627.6	630.71
G 124(d)	574.01 65.2	65 - 55	+ 3.1	65.7-54.5	54.5-50	50 - 2	2 - 0	1.9-3.1	646.1	649.21
G 128(s)	16.0	16 - 6	+ 3.3	16 - 5.5	5.5-3.5	3.5 - 2	2 - 0	1.5-3.5	588.6	592.03
G 130(s)	17.2	17 - 7	+ 2.3	17 - 6.5	6.5-4.5	4.5-2.5	2.5 - 0	2.3-2.7	638.4	640.91
G 131(s)	19.0	17 - 7	+ 2.3	17 - 6.5	6.5-4.0	4-2.5	2.5 - 0	2.5-2.5	628.6	631.12
G 132(d)	577.72 53.3	53 - 43	+ 2.1	53.3-42.4	42.4-40.4	40.4-2.7	2.7 - 0	2.7-2.3	620.1	622.19
G 133(d)	567.52 54.0	53.5-43.5	+ 2.4	54 - 43	43 - 41	41 - 2.5	2.5 - 0	2.4-2.5	620.1	622.58
G 134(s)	17.4	17 - 7	+ 2.5	17.4-6.5	6.5-4.5	4.5-2.6	2.6 - 0	2.6-2.4	620.5	622.67
G 135(s)	20.0	20 - 10	+ 2.7	20 - 9	9-6.8	6.8-2.2	2.2 - 0	2.1-2.9	627.8	630.49
G129(s)	11.0	11 - 6	+ 3.6	11 - 5	5 - 4	4 - 1	1 - 0	1.4-3.6	579.7	583.27

Table 2. Monitor Well Construction Data - Brighton Sanitary Landfill (June 1984)



Parameter	Highest Observed Concentration	Well @ No.	Highest Observed Upgradient Concentration	Well @ No.	Lowest Observed Concentration	Well @ No.
SO <sub>4</sub> (mg/l)	2330	G109	2330	G109	14	G104
CL (mg/l)	97	G104	58	G109	2.0	G103
TDS (mg/l)	2958	G109	2958	G109	145	G104
TOC (mg/l)	19.9	G104	12.3	G109	2.52	G109
TOX (mg/l)	.069	G103	.059	G109	0.01	G103, G104, G109
Pb(mg/l)	1.09	G109	1.09	G109	0.0	several wells
Cr(mg/l)	0.44	G107	0.03	G109	L.T. 001	G104
Nitrates(mg/l)	36.3	G109	36.3	G109	L.T. 0.1	G103, G104

Because these and other constituents are moving through the subsurface in "slugs", a sampling of all wells on a given date reveals little concerning the problem. On one date up-gradient wells can display higher concentrations of the pollutants whereas on another date downgradient wells may be elevated. The net result of this situation is that "true" background water quality, at least with the present series of wells, cannot be defined. Further, because a source of interference exists, one which emits the same or similar constituents as should be expected from the facility, it is not presently possible to determine if the waste management area is contributing a component to the existing contamination. Consequently, the operator, through this assessment, must first determine a mechanism for demonstrating compliance with the statutory requirements. The actual demonstration of compliance must then follow.